Misty Botello

From: PUBCOMMENT-OCC
Sent: Monday, September 11, 2023 10:56 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: jacobialvarez@gmail.com <jacobialvarez@gmail.com>
Sent: Sunday, September 10, 2023 12:48 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Jacobi Alvarez

EMAIL: jacobialvarez@gmail.com

COMPANY:

ADDRESS: 6905 E RIVERSIDE DR APT 208
AUSTIN TX 78741-6697

PHONE: 5122284043

FAX:

COMMENTS: As our climate changes, water becomes more and more scared and necessary to protect. Barton Creek has been a spiritual zone to relax in and enjoy nature since I was born in Austin in 1992. I would like a public hearing on this permit and I reject it going forward • The soils in the area are too thin to absorb the volume of wastewater that will be released under the proposed permit. • The proposed permit will cause wastewater to run off into Barton Creek and into any nearby karst features. • The negative impacts, like increased algal growth and changes in species composition, of wastewater on Hill Country streams are well documented and would likely occur because of runoff from the proposed

permit. • The application for the proposed permit is missing key information that would allow the public to better evaluate the impacts of the proposed permit.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 1:45 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: wmatest70@gmail.com <wmatest70@gmail.com>
Sent: Sunday, January 28, 2024 8:41 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Wendy Austin

EMAIL: wmatest70@gmail.com

COMPANY: Wendy Austin

ADDRESS: 13000 TRAIL DRIVER
AUSTIN TX 78737-9536

PHONE: 8033179333

FAX:

COMMENTS: As a resident living close to this proposed venue and a citizen concerned with the environment, I would like to request a contested hearing related to this permit. The septic discharge produced by this venue will contaminate Barton Creek.

Misty Botello

From: PUBCOMMENT-OCC
Sent: Friday, August 25, 2023 7:58 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

RFR

From: annbanos@gmail.com <annbanos@gmail.com>
Sent: Thursday, August 24, 2023 9:40 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Ann Banos

EMAIL: annbanos@gmail.com

COMPANY:

ADDRESS: 11321 OAK BRANCH DR
AUSTIN TX 78737-8818

PHONE: 5127730580

FAX:

COMMENTS: I am opposed to the venue being allowed to be built down Fitzhugh. We are in an environmentally sensitive area and runoff from a septic system will more than likely wind up Barton Creek. We need to preserve the hill country waterways and not do harm to them. Please reconsider this venue and what it will do to the water ways. Thank you, concerned long time resident.

Misty Botello

From: PUBCOMMENT-OCC
Sent: Monday, September 11, 2023 10:49 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

RFR

From: alison.baucom@gmail.com <alison.baucom@gmail.com>
Sent: Friday, September 8, 2023 6:32 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Alison Baucom

EMAIL: alison.baucom@gmail.com

COMPANY:

ADDRESS: 12600 PAULS VALLEY RD
AUSTIN TX 78737-9506

PHONE: 2142020447

FAX:

COMMENTS: Dear Commissioners, I am writing to express my deep concerns regarding the proposal to permit the release of large volumes of wastewater onto fields situated along the banks of Barton Creek. As a concerned citizen and an advocate for the protection of our local environment, I kindly request you to reconsider and deny this permit for the following reasons: 1. Inadequate Soil Absorption: West Austin is characterized by its thin soils which, as per several environmental assessments, are incapable of absorbing large volumes of wastewater. The proposed permit would see the release of volumes far beyond the absorption capacity of these soils. 2. Risk of Runoff into Barton Creek: The thin nature of the soil, combined with its inability to absorb large volumes of wastewater, will inevitably result in runoff. This

runoff poses a serious threat of directly entering Barton Creek, which is not only a beloved natural waterway but also a significant ecosystem that supports diverse flora and fauna. 3. Threat to Karst Features: It is also noteworthy to mention the presence of various karst features in proximity to the area in question. These karst systems are delicate geological formations that can be contaminated by wastewater runoff, posing significant environmental and potentially health risks. 4. Documented Negative Impacts on Hill Country Streams: There is ample evidence suggesting the adverse effects of wastewater on Hill Country streams. These impacts range from habitat degradation to loss of aquatic biodiversity, and even affecting the quality of water that eventually reaches our homes. Introducing large volumes of wastewater, as proposed, would most likely result in similar negative outcomes for Barton Creek. 5. Impact on Recreation and Local Economy: Barton Creek is not just an environmental treasure; it's a recreational hub for residents and tourists alike. The potential contamination and degradation of the creek could adversely affect local tourism and related businesses, thereby having ripple effects on our local economy. In light of these concerns, it is paramount that we prioritize the health and vitality of our natural waterways over temporary and potentially harmful solutions. I urge the Commission to consider the long-term implications of such a permit and to put the environment and the well-being of the community at the forefront of this decision. I sincerely hope you will take these points into account and deny the permit for the proposed wastewater release. Our community trusts the Commission to uphold the highest environmental standards and to make decisions in the best interests of both the environment and the public. Thank you for your time and consideration. Best, Ali Certified Texas Master Naturalist Certified Texas Waters Specialist

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 30, 2024 12:57 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: alison.baucom@gmail.com <alison.baucom@gmail.com>
Sent: Monday, January 29, 2024 6:48 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Alison Baucom

EMAIL: alison.baucom@gmail.com

COMPANY:

ADDRESS: 12600 PAULS VALLEY RD
AUSTIN TX 78737-9506

PHONE: 2142020447

FAX:

COMMENTS: Subject: Request for Denial of Permit Application for Fitzhugh Concert Venue Dear Members of the Texas Commission on Environmental Quality, I am writing to express my deep concern regarding the proposed Fitzhugh Concert Venue and its potential environmental impact on Barton Creek. As a resident, neighbor, and master naturalist, I am committed to the preservation and protection of our community's natural resources. I urge the Texas Commission on Environmental Quality to deny the permit application for the Fitzhugh Concert Venue in its current form, and to thoroughly assess the project's impact on the environment, traffic safety, and the overall well-being of our community. My primary concerns include: Barton Creek Protection: Barton Creek is a vital natural resource that supports diverse flora and fauna. The proposed development raises serious concerns about pollution and degradation of Barton Creek. It is essential to prioritize the protection of this water body and its ecosystem. Traffic Impact Assessment: A comprehensive traffic impact assessment is imperative to evaluate the potential safety hazards and increased traffic resulting from the Fitzhugh Concert Venue. The assessment should consider the proposed development's impact on road safety, trip counts, and overall traffic management. Noise Pollution and Light Pollution: The construction and operation of a concert venue can contribute significantly to noise and light pollution. These pollutants can disturb the natural habitat, impact wildlife, and diminish the quality of life for residents in the surrounding areas. Protection of Shield Ranch and Golden-cheeked Warbler: The proposed development may pose a threat to Shield Ranch and the habitat of the endangered Golden-cheeked warbler. It is crucial to assess and address the potential impact on these sensitive environments. Considering these concerns, I firmly believe that the Fitzhugh Concert Venue is not suitable for the proposed location. The adverse outcomes associated with this development have the potential to harm both the community and the environment. I respectfully request that the Texas Commission on Environmental Quality conducts a thorough and impartial evaluation of the proposed development, taking into account the concerns raised by the community and experts in various fields. It is crucial to prioritize the long-term well-being of our community and the protection of our natural resources. Thank you for your attention to this matter. I trust that the Texas Commission on Environmental Quality will act responsibly in safeguarding our environment and the interests of the community. Sincerely, Ali Baucom Certified Master Naturalist and Texas Waters Specialist

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, February 1, 2024 10:18 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: jcbonilla76@hotmail.com <jcbonilla76@hotmail.com>
Sent: Wednesday, January 31, 2024 10:37 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MR Juan Carlos Bonilla

EMAIL: jcbonilla76@hotmail.com

COMPANY:

ADDRESS: 11306 LONG BRANCH DR
AUSTIN TX 78736-6507

PHONE: 8315242900

FAX:

COMMENTS: I'D LIKE TO REQUEST A CONTESTED CASE HEARING. I AM VERY CONCERNED ABOUT THE SEPTIC PERMIT FOR THE PROPOSED AMPHITHEATER. MY BIGGEST CONCERN IS THE POSSIBILITY OF CONTAMINATION TO BARTON CREEK. I AM ALSO CONCERNED ABOUT WASTE WATER PROCESSING.

Renee Lyle

From:	PUBCOMMENT-OCC
Sent:	Monday, January 29, 2024 1:32 PM
To:	PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject:	FW: Public comment on Permit Number WQ0016111001

H

From: SGCHERICO@YAHOO.COM <SGCHERICO@YAHOO.COM>
Sent: Sunday, January 28, 2024 1:15 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Sondra Cherico

EMAIL: SGCHERICO@YAHOO.COM

COMPANY:

ADDRESS: 12900 TRAIL DRIVER
AUSTIN TX 78737-9538

PHONE: 5124269714

FAX:

COMMENTS: My house is at 12900 Trail Driver Street, Austin, TX 78737, almost exactly 2 miles from the proposed concert venue treatment facility. When this venue is active, I will be able to both see and hear the noise and light pollution from the hilltop location of my house, and it is quite possible that it will affect aquifer levels that would result in my well going dry. I write to state my objections to the proposed TLAP Permit No. WQ0016111001 to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersections of Crumley Ranch Road, Trautwein Road, and Fitzhugh Road in Hays County, Texas. Its disposal area is located in the Edwards Aquifer Contributing Zone

above Barton Creek. I have concerns about the Draft Permit of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001, including the impacts of disposal and runoff on: Groundwater and surface water contamination; Impact on local wildlife Impact on aquifers, and Waste odors. Disposal and runoff I have grave concerns about the elevations of the proposed site, which is directly uphill from Barton Creek where it intersects with Fitzhugh Road. The difference in elevation from the treatment facility to Barton Creek is over 140 feet, almost all downhill. In addition, the properties to the north of the proposed site are also downhill and will almost certainly be affected by runoff. Other irrigation fields in the area have experienced numerous problems, including: Poor soils unable to absorb large amounts of water; Runoff of effluent from saturated irrigation fields; and Insufficient storage capacity to store effluent when soils are saturated – i.e. 3 days of storage noted in draft permit may not be sufficient for the location, especially in situations such as the recent heavy rains for many days at a time. A number of similarly-permitted facilities in Hays County have occasionally failed, often resultings in untreated wastewater flowing into local streams. I am aware of a number of cases where sanitation at music venues became overwhelmed in wet weather, in some cases causing a spread of disease. What safeguards can be put in place to ensure that this can't occur? Surface water I am concerned about the potential impact of the site's operations and the proposed land application of wastewater next to Barton Creek and the waters running into Barton Creek. The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life. What plans are in place to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on Barton Creek, especially given that Barton Creek is almost directly downhill of the site? I have concerns about the amount of wastewater that will be generated at the venue. There is limited information about the number of concerts per week to be held at Rockingwall. It seems that information must be made available to determine critical technical details accurately. The occupancy/capacity of the venue is also critical to know. I have concerns about runoff, locations of the drip fields, and size of the property relative to the requirements to properly manage the TLAP permit. Blizexas should be required to disclose planned locations for parking lots and total amount of impervious cover from all impervious surfaces to ensure that engineering assumptions are correct under the draft permit. Has TCEQ conducted a site visit to determine if the property is large enough to accommodate all requirements? If not, what is TCEQ's basis for believing that the proposed TLAP facility will not harm Barton Creek or adjacent properties? Groundwater I have concerns regarding the placement of waste within the Edwards Aquifer Contributing Zone. Blizexas has announced plans to pump up to 12,000 gallons per day from a well on the site of this property, to operate the wastewater treatment system. The aquifers in this area are already very overtaxed, and the Middle Trinity aquifer has no active recharge zone. If this well taps into the middle Trinity (which provides water for my property), then it will up this ancient water very quickly. Regardless of which aquifer supplies the well, it has a very high potential to cause the wells in the area to go dry very quickly, which is already a big problem in this area. The thin soil characteristic of the disposal area poses a potential risk to not only the Edwards Aquifer but also the Trinity Aquifer, as many neighboring property owners rely on the Trinity as their sole source of water for domestic and commercial use. The soil in the proposed treatment system is very thin, usually less than 1 foot above the limestone bedrock in the area. Therefore it has little to no capacity to absorb the 12,000 gallons of effluent being produced daily by the wastewater facility. It seems that a proposed groundwater well is identified in the application. What is the capacity of the well? Is the well currently permitted with the Hays Trinity Groundwater Conservation District? Is there enough potential water production to maintain grass production as required under the TLAP permit? And is this enough water for fire-control purposes? Another possible source of water to run the wastewater facility proposed by Blizexas is to truck in 12,000 gallons of water per day, This works out to 50 tons of water per day being carried over the substandard roads leading to the proposed venue, and has the potential to severely damage these roads and bridges in a short period of time. As the road damage increases, this will likely limit the ability to supply enough water using this method, and the wastewater system will likely become inoperable as a result. I request that Blizexas be required to submit an Edwards Aquifer Contributing Zone plan, if it hasn't already done so. Odor Blizexas only proposes buffer zones for odor control 150 feet from the property line. Can TCEQ ensure that Blizexas's sludge solids management plan is sufficient to protect neighboring properties from odors from the wastewater system? Also, is there adequate capacity for Wastewater Residuals Management to handle offsite disposal under their current permit? Wildlife The plans for the proposed facility show an amphitheater with the stage facing north within a few hundred feet of Shield Ranch, which is a well-known wildlife conservation area. The noise from amplified hip-hop and rock music for multiple nights each week will almost certainly drive the wildlife away from this area and prevent their return. While this is not directly related to the wastewater treatment system, it is certainly a huge factor in the Environmental Quality of the area, and should be considered by the Commission on Environmental Quality, as a

significant reduction in wildlife will most definitely result in multiple environmental impacts. In addition, the powerful public address system used for such concerts will result in considerable noise pollution throughout the area, especially up and down the valley surrounding nearby Barton Creek. Contested Hearing If this application is indeed approved by the TCEQ, then I am requesting a contested hearing as a result. Sincerely yours, Sondra Cherico 12900 Trail Driver St. Austin, TX 78737 512-587-9067

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Tuesday, November 29, 2022 9:05 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: Sgcherico@yahoo.com <Sgcherico@yahoo.com>
Sent: Tuesday, November 29, 2022 8:51 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Sondra Cherico

EMAIL: Sgcherico@yahoo.com

COMPANY:

ADDRESS: 12900 TRAIL DRIVER
AUSTIN TX 78737-9538

PHONE: 5124269714

FAX:

COMMENTS: Comments on Blizexas (Rockingwall) TLAP Permit WQ0016111001 –In response to TCEQ Draft Permit of 6/15/2022 • I live at 12900 Trail Driver Street, Austin, TX 78737, almost exactly 2 miles from the proposed treatment facility. • I write to state my objections to the proposed TLAP Permit No. WQ0016111001 to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road in Hays

County, Texas, 78737. Its disposal area is located in the Edwards Aquifer Contributing Zone near Barton Creek. • I have concerns about the Draft Permit of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001, including the impacts of disposal and runoff on: o Groundwater and surface water contamination; and o Waste odors. • I have grave concerns about the elevations of the proposed site, which is directly uphill from Barton Creek where it intersects with Fitzhugh Road. The difference in elevation from the treatment facility to Barton Creek is over 140 feet, almost all downhill. In addition, the properties to the north of the proposed site are also downhill and will almost certainly be affected by runoff. Disposal and runoff • Other irrigation fields in the area have experienced numerous problems, including: o Poor soils unable to absorb large amounts of water; o Runoff of effluent from saturated irrigation fields; and o Insufficient storage capacity to store effluent when soils are saturated – i.e. 3 days of storage noted in draft permit may not be sufficient for the location. • I am aware of a number of cases where sanitation at music venues became overwhelmed in wet weather, in some cases causing a spread of disease. What safeguards can be put in place to ensure that this can't occur? Surface water • I am concerned about the potential impact of the site's operations and the proposed land application of wastewater next to Barton Creek and the waters running into Barton Creek. o The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life. o What plans are in place to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on Barton Creek, especially given that Barton Creek is almost directly downhill of the site? • I have concerns about the amount of wastewater that will be generated at the venue. There is limited information about the number of concerts per week to be held at Rockingwall. It seems that information must be made available to determine critical technical details accurately. The occupancy/capacity of the venue is also critical to know. • I have concerns about runoff, locations of the drip fields, and size of the property relative to the requirements to properly manage the TLAP permit. o Rockingwall should be required to disclose planned locations for parking lots and total amount of impervious cover from all impervious surfaces to ensure that engineering assumptions are correct under the draft permit. o Has TCEQ conducted a site visit to determine if the property is large enough to accommodate all requirements? If not, what is TCEQ's basis for believing that the proposed TLAP facility will not harm Barton Creek or adjacent properties? Groundwater • I have concerns regarding the placement of waste within the Edwards Aquifer Contributing Zone. o The thin soil characteristic of the disposal area poses a potential risk to not only the Edwards Aquifer but also the Trinity Aquifer, as many neighboring property owners rely on the Trinity as their sole source of water for domestic and commercial use. o I request that the Rockingwall amphitheater submit an Edwards Aquifer Contributing Zone plan, if it hasn't already done so. o It seems that a proposed groundwater well is identified in the application. What is the capacity of the well? Is the well currently permitted with the Hays Trinity Groundwater Conservation District? Is there enough potential water production to maintain grass production as required under the TLAP permit? Odor • Rockingwall only proposes buffer zones for odor control 150 feet from the property line. Can TCEQ ensure that Rockingwall's sludge solids management plan is sufficient to protect neighboring properties from odors from the wastewater system? Also, is there adequate capacity for Wastewater Residuals Management to handle offsite disposal under their current permit?

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 25, 2024 4:01 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: cgmunns@gmail.com <cgmunns@gmail.com>
Sent: Thursday, January 25, 2024 1:57 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Catherine Munns D'Abate

EMAIL: cgmunns@gmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD Unit F
AUSTIN TX 78736-6300

PHONE: 5125690081

FAX:

COMMENTS: I would like to request a contested case hearing for this wastewater permit application

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Wednesday, January 10, 2024 8:01 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: cgmunns@gmail.com <cgmunns@gmail.com>
Sent: Tuesday, January 9, 2024 4:34 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Catherine Munns D'Abate

EMAIL: cgmunns@gmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD Unit F
AUSTIN TX 78736-6300

PHONE: 5125690081

FAX:

COMMENTS: I'm writing to express mine and my family's concerns on the impact of approving this permit. I live directly across the road from this proposed venue (700 yards south) and fear for the how the permit's approval may impact the safety of my young children, wildlife and endangered species in the area, and potential impact to the Trinity Aquifer which is the primary drinking water supply for thousands of Central Texans. This location hosts poor site geology for the installation of a subsurface drip irrigation system and there would be a lack of soil and vegetation to absorb the nutrients contained in the domestic wastewater. Wastewater runoff from the site has the potential to impact pristine hill country streams and would flow directly down my family's and neighbor's easement, ruining our driveway and

disrupting the balanced flow of water into Barton Creek. Storm surge water combined with saturated retention ponds full of processed waste have no place to be absorbed since the proposed venue is 68% impervious cover and would, again, flow both down my family's driveway and into the protected land of the Shield Ranch Nature Conservancy. I urge you to please listen to the voices of the local community and the statistical facts from engineers saying this permit should not be approved. It is not in the best interest of this community and will do substantial harm to the environment and the animals and people who inhabit it. Thank you for your time.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 9, 2024 11:35 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: cgmunns@gmail.com <cgmunns@gmail.com>
Sent: Tuesday, January 9, 2024 11:11 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Catherine Munns D'Abate

EMAIL: cgmunns@gmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD Unit F
AUSTIN TX 78736-6300

PHONE: 5125690081

FAX:

COMMENTS: I'm writing to express mine and my family's concerns on the impact of approving this permit. I live directly across the road from this proposed venue (700 yards south) and fear for the how the permit's approval may impact the safety of my young children, wildlife and endangered species in the area, and potential impact to the Trinity Aquifer which is the primary drinking water supply for thousands of Central Texans. This location hosts poor site geology for the installation of a subsurface drip irrigation system and there would be a lack of soil and vegetation to absorb the nutrients contained in the domestic wastewater. Wastewater runoff from the site has the potential to impact pristine hill country streams and would flow directly down my family's and neighbor's easement, ruining our driveway and

disrupting the balanced flow of water into Barton Creek. Storm surge water combined with saturated retention ponds full of processed waste have no place to be absorbed since the proposed venue is 68% impervious cover and would, again, flow both down my family's driveway and into the protected land of the Shield Ranch Nature Conservancy. I urge you to please listen to the voices of the local community and the statistical facts from engineers saying this permit should not be approved. It is not in the best interest of this community and will do substantial harm to the environment and the animals and people who inhabit it. Thank you for your time.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 11:38 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: daviddabate@live.com <daviddabate@live.com>
Sent: Friday, January 26, 2024 11:19 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Dave D'Abate

EMAIL: daviddabate@live.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD UNIT F
AUSTIN TX 78736-6301

PHONE: 8016868692

FAX:

COMMENTS: I would like to request a contested case hearing for this wastewater permit application.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 18, 2024 11:32 AM
To: PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Cc: PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: Stephanie.darter23@gmail.com <Stephanie.darter23@gmail.com>
Sent: Wednesday, January 17, 2024 8:06 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Stephanie Darter

EMAIL: Stephanie.darter23@gmail.com

COMPANY:

ADDRESS: 11914 FITZHUGH CORS
DRIPPING SPRINGS TX 78620-5018

PHONE: 9034413042

FAX:

COMMENTS: I request a contested case hearing!!!

Misty Botello

From: PUBCOMMENT-OCC
Sent: Tuesday, August 22, 2023 8:55 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

From: Stephanie.darter23@gmail.com <Stephanie.darter23@gmail.com>
Sent: Tuesday, August 22, 2023 12:23 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Stephanie Darter

EMAIL: Stephanie.darter23@gmail.com

COMPANY:

ADDRESS: 11914 FITZHUGH CORS
DRIPPING SPRINGS TX 78620-5018

PHONE: 9034413042

FAX:

COMMENTS: I do not want human wastes to be flowing into the rivers and lakes here. It needs to be relocated to a more efficient area that is not near homes and farms. Having waste water entering into farms would be toxic for the farm animals as well.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 18, 2024 11:34 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: crisd@fusionnettech.com <crisd@fusionnettech.com>
Sent: Thursday, January 18, 2024 8:41 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Cristiano De paolis

EMAIL: crisd@fusionnettech.com

COMPANY:

ADDRESS: 439 vail river rd
dripping springs TX 78620

PHONE: 6263722048

FAX:

COMMENTS: to whom it may concern, we would like to REQUEST A CONTESTED CASE HEARING on this matter

Tammy Johnson

From:	PUBCOMMENT-OCC
Sent:	Monday, March 24, 2025 8:24 AM
To:	PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Cc:	PUBCOMMENT-WQ
Subject:	FW: Public comment on Permit Number WQ0016111001

H

From: mdenton13@austin.rr.com <mdenton13@austin.rr.com>
Sent: Saturday, March 22, 2025 11:01 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Mark Hunter Denton

EMAIL: mdenton13@austin.rr.com

COMPANY:

ADDRESS: 13325 Trail Driver
Austin, TX 78737

PHONE: 5129241638

FAX:

COMMENTS: Dear Chief Clerk Gharis, with regard to the Blizexas, LLC application for construction of a concert venue along Fitzhugh Road in Hays County, Texas, I formally request a contested case hearing. I and my family will be both adversely economically affected and our health and safety will be adversely affected if this permit is allowed to proceed. This proposed site and its projected vehicular access to Fitzhugh Rd will dramatically affect traffic flow and safety on not only Fitzhugh Rd, it will also adversely

affect Trautwein Rd and Crumley Ranch Rd. Myself and my family regularly travel on these road for business, work and pleasure in both Dripping Springs and Bee Cave and the project increase in traffic by 2000+ vehicles both during the work hours and in the evening could endanger our lives. Furthermore, the site plan for this proposed facility shows only one stormwater "retention pond" but none of the waste/stormwater drainage flow patterns mapped show that stormwater captured by that small pond. Therefore, the vast majority of the stormwater runoff will flow either directly into Barton Creek via the Fitzhugh Rd drainage ditch ie., the "Southern Watershed" or indirectly into Barton Creek via the unnamed drainage creek of the "Northern Watershed." Regardless, this contaminated stormwater will enter Barton Creek and the Edward's Aquifer thus potentially contaminating our well water. Runoff could also causing flooding at the low water crossing of Fitzhugh Rd and Barton Creek!

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Monday, March 24, 2025 8:24 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: mdenton13@austin.rr.com <mdenton13@austin.rr.com>
Sent: Saturday, March 22, 2025 11:00 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Mark Hunter Denton

EMAIL: mdenton13@austin.rr.com

COMPANY:

ADDRESS: 13325 Trail Driver
Austin, TX 78737

PHONE: 5129241638

FAX:

COMMENTS: Dear Chief Clerk Gharis, with regard to the Blizexas, LLC application for construction of a concert venue along Fitzhugh Road in Hays County, Texas, I formally request a contested case hearing. I and my family will be both adversely economically affected and our health and safety will be adversely affected if this permit is allowed to proceed. This proposed site and its projected vehicular access to Fitzhugh Rd will dramatically affect traffic flow and safety on not only Fitzhugh Rd, it will also adversely

affect Trautwein Rd and Crumley Ranch Rd. Myself and my family regularly travel on these road for business, work and pleasure in both Dripping Springs and Bee Cave and the project increase in traffic by 2000+ vehicles both during the work hours and in the evening could endanger our lives. Furthermore, the site plan for this proposed facility shows only one stormwater "retention pond" but none of the waste/stormwater drainage flow patterns mapped show that stormwater captured by that small pond. Therefore, the vast majority of the stormwater runoff will flow either directly into Barton Creek via the Fitzhugh Rd drainage ditch ie., the "Southern Watershed" or indirectly into Barton Creek via the unnamed drainage creek of the "Northern Watershed." Regardless, this contaminated stormwater will enter Barton Creek and the Edward's Aquifer thus potentially contaminating our well water. Runoff could also causing flooding at the low water crossing of Fitzhugh Rd and Barton Creek!

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Monday, March 24, 2025 8:23 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: mdenton13@austin.rr.com <mdenton13@austin.rr.com>
Sent: Friday, March 21, 2025 5:55 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Mark Hunter Denton

EMAIL: mdenton13@austin.rr.com

COMPANY:

ADDRESS: 13325 Trail Driver
Austin, TX 78737

PHONE: 5129241638

FAX:

COMMENTS: Dear Chief Clerk Gharis, with regard to the Blizexas, LLC application for construction of a concert venue along Fitzhugh Road in Hays County, Texas, I formally request a contested case hearing. I and my family will be both adversely economically affected and our health and safety will be adversely affected if this permit is allowed to proceed. This proposed site and its projected vehicular access to Fitzhugh Rd will dramatically affect traffic flow and safety on not only Fitzhugh Rd, it will also adversely

affect Trautwein Rd and Crumley Ranch Rd. Myself and my family regularly travel on these road for business, work and pleasure in both Dripping Springs and Bee Cave and the project increase in traffic by 2000+ vehicles both during the work hours and in the evening could endanger our lives. Furthermore, the site plan for this proposed facility shows only one stormwater "retention pond" but none of the waste/stormwater drainage flow patterns mapped show that stormwater captured by that small pond. Therefore, the vast majority of the stormwater runoff will flow either directly into Barton Creek via the Fitzhugh Rd drainage ditch ie., the "Southern Watershed" or indirectly into Barton Creek via the unnamed drainage creek of the "Northern Watershed." Regardless, this contaminated stormwater will enter Barton Creek and the Edward's Aquifer thus potentially contaminating our well water. Runoff could also causing flooding at the low water crossing of Fitzhugh Rd and Barton Creek!

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Wednesday, March 19, 2025 8:08 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: mdenton13@austin.rr.com <mdenton13@austin.rr.com>
Sent: Tuesday, March 18, 2025 3:56 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Mark Hunter Denton

EMAIL: mdenton13@austin.rr.com

COMPANY:

ADDRESS: 13325 Trail Driver
Austin, TX 78737

PHONE: 5129241638

FAX:

COMMENTS: Dear Chief Clerk Gharis, with regard to the Blizexas, LLC application for construction of a concert venue along Fitzhugh Road in Hays County, Texas, I formally request a contested case hearing. I and my family will be both adversely economically affected and our health and safety will be adversely affected if this permit is allowed to proceed. This proposed site and its projected vehicular access to Fitzhugh Rd will dramatically affect traffic flow and safety on not only Fitzhugh Rd, it will also adversely

affect Trautwein Rd and Crumley Ranch Rd. Myself and my family regularly travel on these road for business, work and pleasure in both Dripping Springs and Bee Cave and the project increase in traffic by 2000+ vehicles both during the work hours and in the evening could endanger our lives. Furthermore, the site plan for this proposed facility shows only one stormwater "retention pond" but none of the waste/stormwater drainage flow patterns mapped show that stormwater captured by that small pond. Therefore, the vast majority of the stormwater runoff will flow either directly into Barton Creek via the Fitzhugh Rd drainage ditch ie., the "Southern Watershed" or indirectly into Barton Creek via the unnamed drainage creek of the "Northern Watershed." Regardless, this contaminated stormwater will enter Barton Creek and the Edward's Aquifer thus potentially contaminating our well water. Runoff could also causing flooding at the low water crossing of Fitzhugh Rd and Barton Creek!

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Mark H. Denton

Mailing Address: 13325 Trail Driver Austin, TX 78737 (Hays Co.)

Physical Address (if different): same

City/State: Austin, TX **Zip:** 78737

This information is subject to public disclosure under the Texas Public Information Act

Email: mdenton130austin.rr.com

Phone Number: (512) 924-1638

- Are you here today representing a municipality, legislator, agency, or group? ☒ Yes ☐ No

  If yes, which one? Stop Fitzhugh Concert Venue

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

☐ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☒ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

This project is badly conceived and is in a sensitive Barton Creek watershed. Water and light polusion will be a result of this project.

MH

Please give this form to the person at the information table. Thank you.

January 29, 2024

Office of the Chief Clerk
Texas Commission on Environmental Quality MC-105
P.O. Box 13087
Austin, Texas 78711-3087

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

VIA ELECTRONIC FILING

RE: Water Quality Permit No. WQ0016111001

Dear Chief Clerk:

The following comments by the Hays Trinity Groundwater Conservation District ("District") are in response to the proposed DRAFT Texas Land Application Permit (TLAP) amendment of TCEQ Permit No. WQ00116111001 as filed by Blizexas LLC. Please accept these comments as a request for a contest case hearing on the issue presented.

The Draft Amended Permit authorizes an irrigation site. The new proposed surface irrigation site is in close proximity to Barton Creek, and sits atop and recharges the Trinity Aquifer.

The Hays Trinity Groundwater Conservation District is a state agency authorized by Chapter 8843 Special District Local Laws Code (SB 1147), and Chapter 36 of the State Water Code to protect and manage the quality and quantity of the Trinity Aquifer within the boundaries of its jurisdiction, which include all of the proposed new irrigation sites.

Barton Creek is a recharge feature for the Trinity and Edwards Aquifers eastward. Studies document that Barton Creek recharges the aquifers that supply many public and private water wells with water for domestic potable use, agriculture, and commercial use.

Western Hays County and Effluent Disposal

The Hays Trinity Groundwater Conservation District recognizes Blizexas LLC's need to dispose of treated effluent. The District favors Blizexas LLC's practice of land application and/or reuse. However, because of the karst geology of the region, and the interchange between surface and groundwater in losing streams and other land based recharge features, land application must be executed with extreme care and with thorough knowledge of the land characteristics, especially where conduits result in the interface and exchange of surface water and groundwater.

Dye Trace studies conducted by the District illustrate the porous and transmissive nature of karst landscapes, allowing for a connectivity between local creeks and the Trinity Aquifer (Watson et al., 2019)[1]. When clay soils associated with karst and decaying limestone are saturated, they are unable to absorb irrigation[2] and are prone to run-off into creeks and/or recharge features. This threat is serious to landowners who have an investment-backed expectation of clean, clear water[3] in Barton Creek, and well owners who have similar expectations regarding their water wells.

[1] Watson, J.A., Broun, A.S., Hunt, B.B., Simth, B.A., Johns, D.A., Camp, J., Weirman, D.A., 2018, Summary of Findings: Upper Onion Creek Dye Trace, Hays County, Texas, Winter 2017.
[2] Land-Applied Wastewater Effluent Impacts on the Edwards Aquifer, by Dr. Lauren Ross, available at: http://www.aquiferalliance.net/Library/GEAAPublications/GlenroseEdwardsWastewaterReport20111103.pdf.
[3] Nitrate concentrations and potential sources in the Barton Springs segment of the Edwards aquifer and its contributing zone, Central Texas; USGS Fact Sheet 2011-3035; https://doi.org/10.3133/fs20113035

STAFF & BOARD

Charlie Flatten
General Manager

Radu Boghichi, P.G.
Hydrogeologist

Keaton Hoelscher
Geo-Technician

Laura Thomas
Asst. Gen. Mgr.

District 1
David Smith
Treasurer/Secretary

District 2
Bruce Moulton
President

District 3
Carlos Torres-Verdin

District 4
Linda Kaye Rogers
Vice President

District 5
Armond "Doc" Jones

It is imperative that this permit require a thorough field study of the site by a licensed professional geoscientist which should be completed and reviewed before permit approval.

Comments on the Specifics of Draft Permit No. WQ0016111001

The Draft Permit should contain the following provisions. The irrigation field is located over the Trinity Aquifer outcrop, which is designated by the Texas Water Development Board as a major aquifer of the State and part of a Priority Groundwater Management Area as defined by the TCEQ.

- Recharge-feature identification methodology is inadequate. Irrigation areas must be carefully inspected by a licensed professional geoscientist to assure adequate soils and the absence of recharge or other features that could result in channelizing irrigated wastewater into surface or ground water.

- A TCEQ Professional Geoscientist staff member should conduct a field-study investigation of karst features. Alternatively, the District requests field site access to look for recharge features for the Trinity Aquifer.

- The location of the irrigation fields creates a risk for groundwater contamination. There is a relatively high number of wells in the vicinity of the proposed irrigation fields, according to maps prepared by the Texas Water Development Board. Thus, many people are using groundwater as a domestic water supply, and it is important that irrigation practices not contaminate that groundwater.

- The draft permit should set effluent limitations on nitrate and total nitrogen, given the potential risk to contaminate groundwater. Disposal of wastewater effluent with high nitrate concentrations will increase naturally low nitrogen concentrations in existing groundwater. Groundwater concentrations in the area are naturally low in nitrate, often not detectible, usually less than 1 milligram per liter. Nitrates are a public health concern. The U.S. Environmental Protection Agency's (EPA) National Primary Drinking Water Regulations establish a maximum contaminant level for Nitrate (measured as Nitrogen) in drinking water at 10 mg/L. Long-term exposure above the MCL has the potential to cause serious illness and death in infants[5].

The Hays Trinity Groundwater Conservation District is happy to provide relevant data and technical support.

Thank you for considering these concerns. If you have any questions regarding these comments, please contact me at 512- 858 9253.

Sincerely,

Charlie Flatten, General Manager
Hays Trinity Groundwater Conservation District

---

5 https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Barbara Dietz

Mailing Address: 350 Lost Valley Rd

Physical Address (if different): _____

City/State: Drip. Spgs **Zip:** 78620

This information is subject to public disclosure under the Texas Public Information Act

Email: hummmystic1@gmail.com

Phone Number: (512) 653-2304

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☑ No

  If yes, which one? _____

☑ **Please add me to the mailing list.**

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

I request a Contested case Hearing

I am vehemently opposed to the Blizexas venue. The Sensitive nature & the site cannot ~~to~~ sustain ~~the~~ numbers & people, and the wastewater to be safely kept out of Barton Creek and Edwards Aquifer.

Please give this form to the person at the information table. Thank you.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Wednesday, January 24, 2024 11:38 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: casey.durchholz@live.com <casey.durchholz@live.com>
Sent: Wednesday, January 24, 2024 10:10 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Casey Durchholz

EMAIL: casey.durchholz@live.com

COMPANY:

ADDRESS: 10200 CRUMLEY RANCH RD
AUSTIN TX 78738-6011

PHONE: 8324655435

FAX:

COMMENTS: I live approximately 2 miles from the site for this permit application, along a Barton Creek tributary. For over a decade, I have watched Little Rocky Creek cycle between flood and drought. Even though I am upstream from this project, I fear for the flora and fauna of Barton Creek when the wastewater system of this project inevitably fails and overflows into the watershed. It is not enough for developers to apologize and pay a fine when such devastating accidents occur. They should not have to opportunity to wreak such havoc in the first place. As one of the few pristine waterways left in the region, Barton Creek's water quality must be put above private profit now and in the future for generations of people, animals, and plants to enjoy. Due to my proximity to the site, I request a contested case hearing for this permit application.

Tammy Johnson

From:	PUBCOMMENT-OCC
Sent:	Thursday, April 3, 2025 4:34 PM
To:	PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject:	FW: Public comment on Permit Number WQ0016111001

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: Cdur.elm@gmail.com <Cdur.elm@gmail.com>
Sent: Wednesday, April 2, 2025 9:15 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Casey Durchholz

EMAIL: Cdur.elm@gmail.com

COMPANY:

ADDRESS: 10200 CRUMLEY RANCH RD
Austin, TX 78738

PHONE: 8324655435

FAX:

COMMENTS: I live 2.3miles from the proposed music venue, my water source is a groundwater well, and my home is alongside a tributary of Barton Creek. For these reasons, I am opposed to the permit for a large scale wastewater system being considered. I have a residential septic system because it is necessary to sustain my and my family's livelihood. It is not for recreation, like a music venue would be. My system has malfunctioned in the past and I have taken responsibility to fix it as soon as possible. A malfunctioning system of the proposed size would send wastewater directly into the Barton creek watershed, which is an unacceptable risk. Thank you for all that you do!

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Tuesday, November 29, 2022 9:04 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: casey.durchholz@live.com <casey.durchholz@live.com>
Sent: Tuesday, November 29, 2022 9:04 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Casey Durchholz

EMAIL: casey.durchholz@live.com

COMPANY:

ADDRESS: 10200 CRUMLEY RANCH RD
AUSTIN TX 78738-6011

PHONE: 8324655435

FAX:

COMMENTS: Hello My name is Casey Durchholz. I am 34 years old and have lived on Crumley Ranch Road for the last 10 years. I have always hoped to build a life and raise a family here, but such ill-advised and environmentally harmful proposals nearby have me second guessing whether this is the place to do so. I live on the banks of Rocky Creek, which flows into Barton Creek, so I have a very intimate relationship with the small but beautiful waterways of our area. I have spent many days cooling my heels and swimming in them. My neighbors' children have first discovered nature's

wonders in them. The water is clean and clear and I hope that it will always remain so. I'm sure you can understand why my neighbors and I are concerned about it's future when we consider 5000+ people coming to dump their wastewater in it and then leave without a second thought as to how it may impact our fragile ecosystem. I understand that growth has always and will always occur but looking forward we must grow in a sustainable and conscientious way. For the sake of our natural resources and all who enjoy and rely on them. Thank you for your consideration. Casey Durchholz

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, February 1, 2024 10:19 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: eespana714@gmail.com <eespana714@gmail.com>
Sent: Wednesday, January 31, 2024 10:41 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MR Esteban Espana

EMAIL: eespana714@gmail.com

COMPANY:

ADDRESS: 11306 LONG BRANCH DR
AUSTIN TX 78736-6507

PHONE: 8183839440

FAX:

COMMENTS: I'D LIKE TO REQUEST A CONTESTED CASE HEARING. I AM VERY CONCERNED ABOUT THE SEPTIC PERMIT FOR THE PROPOSED AMPHITHEATER. MY BIGGEST CONCERN IS THE POSSIBILITY OF CONTAMINATION TO BARTON CREEK. I AM ALSO CONCERNED ABOUT WASTE WATER PROCESSING.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, February 1, 2024 10:18 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: espanametal@gmail.com <espanametal@gmail.com>
Sent: Wednesday, January 31, 2024 10:35 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MR Jesus Espana

EMAIL: espanametal@gmail.com

COMPANY:

ADDRESS: 11306 LONG BRANCH DR
AUSTIN TX 78736-6507

PHONE: 8184305052

FAX:

COMMENTS: I'D LIKE TO REQUEST A CONTESTED CASE HEARING. I AM VERY CONCERNED ABOUT THE SEPTIC PERMIT FOR THE PROPOSED AMPHITHEATER. MY BIGGEST CONCERN IS THE POSSIBILITY OF CONTAMINATION TO BARTON CREEK. I AM ALSO CONCERNED ABOUT WASTE WATER PROCESSING PLANS FOR THE AMPHITHEATER.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, February 1, 2024 10:17 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: LAURANCARLOS@YAHOO.COM <LAURANCARLOS@YAHOO.COM>
Sent: Wednesday, January 31, 2024 10:30 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: DR. Laura Espana

EMAIL: LAURANCARLOS@YAHOO.COM

COMPANY:

ADDRESS: 11306 LONG BRANCH DR
AUSTIN TX 78736-6507

PHONE: 8183981618

FAX:

COMMENTS: I'D LIKE TO REQUEST A CONTESTED CASE HEARING. I AM VERY CONCERNED ABOUT THE SEPTIC PERMIT FOR THE PROPOSED AMPHITHEATER. MY BIGGEST CONCERN IS THE POSSIBILITY OF CONTAMINATION TO BARTON CREEK. I AM ALSO CONCERNED ABOUT WASTE WATER PROCESSING.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, February 1, 2024 10:18 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: salvador@espanametal.com <salvador@espanametal.com>
Sent: Wednesday, January 31, 2024 10:39 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MR Salvador Espana

EMAIL: salvador@espanametal.com

COMPANY:

ADDRESS: 11306 LONG BRANCH DR
AUSTIN TX 78736-6507

PHONE: 8182075022

FAX:

COMMENTS: I'D LIKE TO REQUEST A CONTESTED CASE HEARING. I AM VERY CONCERNED ABOUT THE SEPTIC PERMIT FOR THE PROPOSED AMPHITHEATER. MY BIGGEST CONCERN IS THE POSSIBILITY OF CONTAMINATION TO BARTON CREEK. I AM ALSO CONCERNED ABOUT WASTE WATER PROCESSING.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 30, 2024 12:17 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: 2024-1-29 Blizexas TLAP-TCEQ Request for Contested Case.pdf

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: gm@haysgroundwater.com <gm@haysgroundwater.com>
Sent: Monday, January 29, 2024 3:31 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Charlie Flatten

EMAIL: gm@haysgroundwater.com

COMPANY: Hays Trinity GCD

ADDRESS: PO BOX 1648
DRIPPING SPRINGS TX 78620-1648

PHONE: 5128589253

FAX:

COMMENTS: See attached letter requesting a contested case on the TLAP permit application referenced.

January 29, 2024

Office of the Chief Clerk
Texas Commission on Environmental Quality MC-105
P.O. Box 13087
Austin, Texas 78711-3087

VIA ELECTRONIC FILING

RE: Water Quality Permit No. WQ0016111001

Dear Chief Clerk:

The following comments by the Hays Trinity Groundwater Conservation District ("District") are in response to the proposed DRAFT Texas Land Application Permit (TLAP) amendment of TCEQ Permit No. WQ00116111001 as filed by Blizexas LLC. Please accept these comments as a request for a contest case hearing on the issue presented.

The Draft Amended Permit authorizes an irrigation site. The new proposed surface irrigation site is in close proximity to Barton Creek, and sits atop and recharges the Trinity Aquifer.

The Hays Trinity Groundwater Conservation District is a state agency authorized by Chapter 8843 Special District Local Laws Code (SB 1147), and Chapter 36 of the State Water Code to protect and manage the quality and quantity of the Trinity Aquifer within the boundaries of its jurisdiction, which include all of the proposed new irrigation sites.

Barton Creek is a recharge feature for the Trinity and Edwards Aquifers eastward. Studies document that Barton Creek recharges the aquifers that supply many public and private water wells with water for domestic potable use, agriculture, and commercial use.

Western Hays County and Effluent Disposal

The Hays Trinity Groundwater Conservation District recognizes Blizexas LLC's need to dispose of treated effluent. The District favors Blizexas LLC's practice of land application and/or reuse. However, because of the karst geology of the region, and the interchange between surface and groundwater in losing streams and other land based recharge features, land application must be executed with extreme care and with thorough knowledge of the land characteristics, especially where conduits result in the interface and exchange of surface water and groundwater.

Dye Trace studies conducted by the District illustrate the porous and transmissive nature of karst landscapes, allowing for a connectivity between local creeks and the Trinity Aquifer (Watson et al., 2019)[1]. When clay soils associated with karst and decaying limestone are saturated, they are unable to absorb irrigation[2] and are prone to run-off into creeks and/or recharge features. This threat is serious to landowners who have an investment-backed expectation of clean, clear water[3] in Barton Creek, and well owners who have similar expectations regarding their water wells.

[1] Watson, J.A., Broun, A.S., Hunt, B.B., Simth, B.A., Johns, D.A., Camp, J., Weirman, D.A., 2018, Summary of Findings: Upper Onion Creek Dye Trace, Hays County, Texas, Winter 2017.
[2] Land-Applied Wastewater Effluent Impacts on the Edwards Aquifer, by Dr. Lauren Ross, available at: http://www.aquiferalliance.net/Library/GEAAPublications/GlenroseEdwardsWastewaterReport20111103.pdf.
[3] Nitrate concentrations and potential sources in the Barton Springs segment of the Edwards aquifer and its contributing zone, Central Texas; USGS Fact Sheet 2011-3035; https://doi.org/10.3133/fs20113035

STAFF & BOARD

Charlie Flatten
General Manager

Radu Boghichi, P.G.
Hydrogeologist

Keaton Hoelscher
Geo-Technician

Laura Thomas
Asst. Gen. Mgr.

District 1
David Smith
Treasurer/Secretary

District 2
Bruce Moulton
President

District 3
Carlos Torres-Verdin

District 4
Linda Kaye Rogers
Vice President

District 5
Armond "Doc" Jones

It is imperative that this permit require a thorough field study of the site by a licensed professional geoscientist which should be completed and reviewed before permit approval.

Comments on the Specifics of Draft Permit No. WQ0016111001

The Draft Permit should contain the following provisions. The irrigation field is located over the Trinity Aquifer outcrop, which is designated by the Texas Water Development Board as a major aquifer of the State and part of a Priority Groundwater Management Area as defined by the TCEQ.

- Recharge-feature identification methodology is inadequate. Irrigation areas must be carefully inspected by a licensed professional geoscientist to assure adequate soils and the absence of recharge or other features that could result in channelizing irrigated wastewater into surface or ground water.

- A TCEQ Professional Geoscientist staff member should conduct a field-study investigation of karst features. Alternatively, the District requests field site access to look for recharge features for the Trinity Aquifer.

- The location of the irrigation fields creates a risk for groundwater contamination. There is a relatively high number of wells in the vicinity of the proposed irrigation fields, according to maps prepared by the Texas Water Development Board. Thus, many people are using groundwater as a domestic water supply, and it is important that irrigation practices not contaminate that groundwater.

- The draft permit should set effluent limitations on nitrate and total nitrogen, given the potential risk to contaminate groundwater. Disposal of wastewater effluent with high nitrate concentrations will increase naturally low nitrogen concentrations in existing groundwater. Groundwater concentrations in the area are naturally low in nitrate, often not detectible, usually less than 1 milligram per liter. Nitrates are a public health concern. The U.S. Environmental Protection Agency's (EPA) National Primary Drinking Water Regulations establish a maximum contaminant level for Nitrate (measured as Nitrogen) in drinking water at 10 mg/L. Long-term exposure above the MCL has the potential to cause serious illness and death in infants[5].

The Hays Trinity Groundwater Conservation District is happy to provide relevant data and technical support.

Thank you for considering these concerns. If you have any questions regarding these comments, please contact me at 512- 858 9253.

Sincerely,

Charlie Flatten, General Manager
Hays Trinity Groundwater Conservation District

---

5 https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations

January 29, 2024

Office of the Chief Clerk
Texas Commission on Environmental Quality MC-105
P.O. Box 13087
Austin, Texas 78711-3087

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

VIA ELECTRONIC FILING

RE: Water Quality Permit No. WQ0016111001

Dear Chief Clerk:

The following comments by the Hays Trinity Groundwater Conservation District ("District") are in response to the proposed DRAFT Texas Land Application Permit (TLAP) amendment of TCEQ Permit No. WQ00116111001 as filed by Blizexas LLC. Please accept these comments as a request for a contest case hearing on the issue presented.

The Draft Amended Permit authorizes an irrigation site. The new proposed surface irrigation site is in close proximity to Barton Creek, and sits atop and recharges the Trinity Aquifer.

The Hays Trinity Groundwater Conservation District is a state agency authorized by Chapter 8843 Special District Local Laws Code (SB 1147), and Chapter 36 of the State Water Code to protect and manage the quality and quantity of the Trinity Aquifer within the boundaries of its jurisdiction, which include all of the proposed new irrigation sites.

Barton Creek is a recharge feature for the Trinity and Edwards Aquifers eastward. Studies document that Barton Creek recharges the aquifers that supply many public and private water wells with water for domestic potable use, agriculture, and commercial use.

Western Hays County and Effluent Disposal

The Hays Trinity Groundwater Conservation District recognizes Blizexas LLC's need to dispose of treated effluent. The District favors Blizexas LLC's practice of land application and/or reuse. However, because of the karst geology of the region, and the interchange between surface and groundwater in losing streams and other land based recharge features, land application must be executed with extreme care and with thorough knowledge of the land characteristics, especially where conduits result in the interface and exchange of surface water and groundwater.

Dye Trace studies conducted by the District illustrate the porous and transmissive nature of karst landscapes, allowing for a connectivity between local creeks and the Trinity Aquifer (Watson et al., 2019)[1]. When clay soils associated with karst and decaying limestone are saturated, they are unable to absorb irrigation[2] and are prone to run-off into creeks and/or recharge features. This threat is serious to landowners who have an investment-backed expectation of clean, clear water[3] in Barton Creek, and well owners who have similar expectations regarding their water wells.

[1] Watson, J.A., Broun, A.S., Hunt, B.B., Simth, B.A., Johns, D.A., Camp, J., Weirman, D.A., 2018, Summary of Findings: Upper Onion Creek Dye Trace, Hays County, Texas, Winter 2017.
[2] Land-Applied Wastewater Effluent Impacts on the Edwards Aquifer, by Dr. Lauren Ross, available at: http://www.aquiferalliance.net/Library/GEAAPublications/GlenroseEdwardsWastewaterReport20111103.pdf.
[3] Nitrate concentrations and potential sources in the Barton Springs segment of the Edwards aquifer and its contributing zone, Central Texas; USGS Fact Sheet 2011-3035; https://doi.org/10.3133/fs20113035

STAFF & BOARD

Charlie Flatten
General Manager

Radu Boghichi, P.G.
Hydrogeologist

Keaton Hoelscher
Geo-Technician

Laura Thomas
Asst. Gen. Mgr.

District 1
David Smith
Treasurer/Secretary

District 2
Bruce Moulton
President

District 3
Carlos Torres-Verdin

District 4
Linda Kaye Rogers
Vice President

District 5
Armond "Doc" Jones

It is imperative that this permit require a thorough field study of the site by a licensed professional geoscientist which should be completed and reviewed before permit approval.

Comments on the Specifics of Draft Permit No. WQ0016111001

The Draft Permit should contain the following provisions. The irrigation field is located over the Trinity Aquifer outcrop, which is designated by the Texas Water Development Board as a major aquifer of the State and part of a Priority Groundwater Management Area as defined by the TCEQ.

- Recharge-feature identification methodology is inadequate. Irrigation areas must be carefully inspected by a licensed professional geoscientist to assure adequate soils and the absence of recharge or other features that could result in channelizing irrigated wastewater into surface or ground water.

- A TCEQ Professional Geoscientist staff member should conduct a field-study investigation of karst features. Alternatively, the District requests field site access to look for recharge features for the Trinity Aquifer.

- The location of the irrigation fields creates a risk for groundwater contamination. There is a relatively high number of wells in the vicinity of the proposed irrigation fields, according to maps prepared by the Texas Water Development Board. Thus, many people are using groundwater as a domestic water supply, and it is important that irrigation practices not contaminate that groundwater.

- The draft permit should set effluent limitations on nitrate and total nitrogen, given the potential risk to contaminate groundwater. Disposal of wastewater effluent with high nitrate concentrations will increase naturally low nitrogen concentrations in existing groundwater. Groundwater concentrations in the area are naturally low in nitrate, often not detectible, usually less than 1 milligram per liter. Nitrates are a public health concern. The U.S. Environmental Protection Agency's (EPA) National Primary Drinking Water Regulations establish a maximum contaminant level for Nitrate (measured as Nitrogen) in drinking water at 10 mg/L. Long-term exposure above the MCL has the potential to cause serious illness and death in infants[5].

The Hays Trinity Groundwater Conservation District is happy to provide relevant data and technical support.

Thank you for considering these concerns. If you have any questions regarding these comments, please contact me at 512- 858 9253.

Sincerely,

Charlie Flatten, General Manager
Hays Trinity Groundwater Conservation District

---

5 https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations

Tammy Johnson

From:	PUBCOMMENT-OCC
Sent:	Wednesday, April 2, 2025 4:26 PM
To:	PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject:	FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: kevin@sq1.us <kevin@sq1.us>
Sent: Wednesday, April 2, 2025 10:34 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MR Kevin Fleming

EMAIL: kevin@sq1.us

COMPANY:

ADDRESS: 14230 Fitzhugh Road
Austin, TX 78736

PHONE: 5126330668

FAX:

COMMENTS: Dear Chief Clerk Gharis: My name is Kevin Fleming. My address is 14230 Fitzhugh Road, Austin, TX 78736, and I can be reached at (512) 633-0668. My property is located approximately 0.7 miles from the proposed wastewater discharge. Barton Creek runs along my property. I have a well on my property that provides our domestic water supplies. I request a contested case hearing regarding Blizexas LLC's application for proposed Texas Land Application Permit No. WQ0016111001. I submitted public comments regarding the application and the proposed permit on August 28, 2023, and January 29, 2024. Following issuance of the Executive Director's Response to Comments, I continue to have the following disputed issues of fact: (1) the permit application has several inaccuracies that have yet to be corrected; (2) the proposed drip fields are insufficiently-sized and inappropriately-located; (3) the design of the site will allow for stormwater inflows into the drip fields; (4) these stormwater inflows will cause overflows from the drip fields resulting in contamination of groundwater and surface waters; (5) the geology of the site, which includes limestone and karst features, is incompatible with the proposed land application; (6) the application significantly underestimates the amount of wastewater that will be generated at the proposed site; (7) the application proposes insufficient storage capacity to properly handle the amount of wastewater that will be generated at the proposed site; (8) the application proposes inadequate nuisance odor abatement measures; (9) the proposed buffer between the drip fields and adjacent properties is insufficient and does not comply with applicable requirements; (10) the application's sewage sludge solids management plan, the Recharge Feature Plan, the Soil Evaluation, the Site Preparation Plan, and the Soil Sampling and Testing do not comply with applicable requirements; (11) the application has inadequate provisions for ensuring sufficient water resources to maintain vegetation and prevent dust nuisance emissions; (12) the operations will endanger local groundwater supplies that are used by neighbors for domestic and livestock purposes; (13) the proposed discharges will negatively impact Barton Creek; (14) the application includes insufficient information regarding Blizexas's plans and capability to respond to malfunctions in the Plant's equipment; (15) the application makes faulty assumptions in the calculations for the wastewater treatment system design; (16) the application fails to include an engineering report, including plans and specifications, that meets the requirements in 30 TAC Chapter 222, Subsurface Drip Dispersal Systems, Subchapter D: Design Criteria; (17) the permit should include discharge limits for Nitrogen and Phosphorus from any authorized discharge and decrease the permitted discharge limits for Total Suspended Solids ("TSS") and Biochemical Oxygen Demand ("BOD"), specifically, a maximum limit of 5 mg/1 for both TSS and BOD; 2 mg/1 Ammonia-Nitrogen (NH3-N); and 1 mg/1 for Total Phosphorus; (18) the proposed impervious cover at 66.45% of the site under the available site design documents is unacceptable; heightens the potential for stormwater overflows into the proposed drip fields; and increases the likelihood of overflows out of those drip fields resulting in contamination of groundwater and surface waters; and (19) the concern regarding the proposed impervious cover is exacerbated by the inadequacy of the post-construction stormwater control and detention measures proposed by Blizexas. I specifically dispute the Executive Director's responses to Comments 1-9, 11, 12, 15 and 17, as grouped by the Executive Director, as they fail to address the substance of my comments and fail to make sufficient changes in the draft permit to address the concerns I raised in my comments. I am an affected party because my personal justiciable interest is affected by the application. My property is located approximately 0.7 miles from the proposed wastewater discharge, and I have a well on my property that provides our domestic water supplies. Because of the proximity of Blizexas's site to my property and the impacts that Blizexas's discharges will have on my property, including my well, as set forth above, I will be adversely affected by the proposed facility in a manner not common to members of the general public. I appreciate your consideration of my request for a contested case hearing. Please contact me if you have any questions.

January 29, 2024

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

Office of the Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Supplemental Comments, Request for Public Meeting, and Request for Contested Case Hearing

Dear Chief Clerk Gharis:

I am a landowner in close proximity to Blizexas's proposed site for a music venue. I have several concerns regarding this site and Blizexas's application for a Texas Land Application Permit. These include: (1) the permit application has several inaccuracies that have yet to be corrected; (2) the proposed drip fields are insufficiently-sized and inappropriately-located; (3) the design of the site will allow for stormwater inflows into the drip fields; (4) these stormwater inflows will cause overflows from the drip fields resulting in contamination of groundwater and surface waters; (5) the geology of the site, which includes limestone and karst features, is incompatible with the proposed land application; (6) the application significantly underestimates the amount of wastewater that will be generated at the proposed site; (7) the application proposes insufficient storage capacity to properly handle the amount of wastewater that will be generated at the proposed site; (8) the application proposes inadequate nuisance odor abatement measures; (9) the proposed buffer between the drip fields and adjacent properties is insufficient and does not comply with applicable requirements; (10) the application's sewage sludge solids management plan, the Recharge Feature Plan, the Soil Evaluation, the Site Preparation Plan, and the Soil Sampling and Testing do not comply with applicable requirements; (11) the application has inadequate provisions for ensuring sufficient water resources to maintain vegetation and prevent dust nuisance emissions; (12) the operations will endanger local groundwater supplies that are used by neighbors for domestic and livestock purposes; (13) the proposed discharges will negatively impact Barton Creek; (14) the application includes insufficient information regarding Blizexas's plans and capability to respond to malfunctions in the Plant's equipment; (15) the application makes faulty assumptions in the calculations for the wastewater treatment system design; and (16) the application fails to include an engineering report, including plans and specifications, that meets the requirements in 30 TAC Chapter 222, Subsurface Drip Dispersal Systems, Subchapter D: Design Criteria.

I also request that the agency impose discharge limits for Nitrogen and Phosphorus from any authorized discharge and decrease the permitted discharge limits for Total Suspended Solids ("TSS") and Biochemical Oxygen Demand ("BOD"). Specifically, I request that the draft permit be revised to impose a maximum limit of 5 mg/l for both TSS and BOD; 2 mg/l Ammonia-Nitrogen (NH3-N); and 1 mg/l for Total Phosphorus.

There have been rumors that Blixesas may or have already purchased land across Fitzhugh Road. Not sure of the purpose, but could be for parking or other uses? If that is the case, then this entire process needs to be started over to account for all the land that is proposed to be developed

and not just this site as presented. Please ask if that is the case or the future so the public has the entire picture, not just a part of the plan. This if great concern.

In addition, the proposed impervious cover at 66.45% of the site under the available site design documents is unacceptable. Such a design heightens the potential for stormwater overflows into the proposed drip fields and increases the likelihood of overflows out of those drip fields resulting in contamination of groundwater and surface waters. This concern is exacerbated by the inadequacy of the post-construction stormwater control and detention measures proposed by Blizexas.

Please deny Blizexas's application outright or make significant changes to the proposed draft permit to address these comments.

Sincerely,

Kevin Fleming

14230 Fitzhugh Road

512.633.0668

kevin@sq1.us

27

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: KEVIN FLEMING —

Mailing Address: (Sue Munns will read his statement)

Physical Address (if different): _____

City/State: _____ **Zip:** _____

This information is subject to public disclosure under the Texas Public Information Act

Email: 14230 FITZWIGHT, ATX, 78736

Phone Number: (512) 636 9423

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☐ No

  If yes, which one? _____

☐ **Please add me to the mailing list.**

☑ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 25, 2024 12:29 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: kevin@sq1.us <kevin@sq1.us>
Sent: Wednesday, January 24, 2024 6:57 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Kevin A Fleming

EMAIL: kevin@sq1.us

COMPANY: 1956

ADDRESS: 14230 FITZHUGH RD
AUSTIN TX 78736-6414

PHONE: 5126330668

FAX:

COMMENTS: In addition to my previous comments, I would like to request a contested case hearing

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 23, 2024 9:39 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: kevin@sq1.us <kevin@sq1.us>
Sent: Monday, January 22, 2024 5:50 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Kevin A Fleming

EMAIL: kevin@sq1.us

COMPANY:

ADDRESS: 14230 FITZHUGH RD
AUSTIN TX 78736-6414

PHONE: 5126330668

FAX:

COMMENTS: I live at 14230 Fitzhugh Road, approximately 1/2 mile from the proposed venue. I have a well on my property that is my sole source of drinking water. I am requesting a public hearing for wastewater permit as there are multiple concerns about the impact this development will have on our water quality in the area. the quality of well water could be directly impacted by the wastewater uses of this site into the aquifer and to our drinking water. Stormwater runoff. We have heard rumors that the developer has or will purchase land across Fitzhugh Road for parking. If that is so, the parking area should be designed and included in this application. Otherwise we do not have the full picture of the development. Please ask the developer this question and request their application be updated before

the public hearing. The runoff. If not properly maintained will end up in Barton Creek and likely damage the already fragile drainage ditch along Fitzhugh Road. The drainage during a rain event is remarkable. If their ponds are not perfect the damage could be serious as pollutants will be in the creek within minutes. The parking lot is virtually 100% impervious coverage. Is this a water quality pond or just detention. with 2000 cars, the oil and rubber will be extensive. How is this addressed? The well they plan will most likely deplete the aquifer in the area. There are many wells that go dry frequently in the area that cost the area residents dearly and could be without water for days or longer. Has the full impact been weighed for the well on this site? Expansion. Will they expand their hours, dates the venue will be operated? Will they add restaurants, an indoor venue? Much of this is not clear. How could TCEQ approve this application without answers to these questions. Please clarify the use will not be expanded, nor will more events be planned or added uses. Our fear is that once opened they will expand and no control. Have these hard questions been asked?

Misty Botello

From: PUBCOMMENT-OCC
Sent: Monday, August 28, 2023 2:26 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: August 28 letter TCEQ2.docx

PM

From: kevin@sq1.us <kevin@sq1.us>
Sent: Monday, August 28, 2023 10:34 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Kevin Fleming

EMAIL: kevin@sq1.us

COMPANY: Kevin Fleming

ADDRESS: 14230 FITZHUGH RD
AUSTIN TX 78736-6414

PHONE: 5126330668

FAX:

COMMENTS: My comments are in the attached file.

August 28, 2023

Texas Commission on Environmental Quality
Office of the Chief Clerk
MC 105
PO Box 13087
Austin, TX 78711-3087

RE: Permit No. WQ0016111001 filed by Blizexas, LLC.

Attention Office of the Chief Clerk:

My name is Kevin Fleming and I live at 14230 Fitzhugh Road at Barton Creek, in Hays County. I am writing to express my concerns and to request a public meeting regarding the domestic wastewater Permit No. WQ0016111001 filed by Blizexas, LLC.

My property is located approximately 0.7 miles from the proposed wastewater discharge location. My family and I have lived here for more than 24 years, peacefully enjoying the serenity of the beautiful Texas hill country. The beautiful and pristine Barton Creek runs along our property, and we enjoy an abundance of wildlife, including whitetail deer, Rio Grande turkeys, frogs, and various species of birds, including the golden cheeked warbler, which is currently an endangered species. We are concerned that the domestic discharge permit filed by Blizexas, LLC will threaten all of this by significantly affecting the existing ecosystem. Potential hazards to the local environment and health and safety of residents in the surrounding area include water contamination from wastewater that will be compounded by parking lot runoff and area flooding, concerns about expansion and venue capacity, increased risks resulting from high traffic, and environmental disruption.

Water Contamination

Blizexas, LLC is proposing to install a drip irrigation system to discharge wastewater from their proposed music venue at a rate not to exceed 12,000 gallons per day. We are concerned that this amount of wastewater has the potential to impact the Trinity aquifer, which supplies drinking water to thousands of Central Texans. The aquifer recharge zone lies directly beneath the property. This is especially concerning considering that we do not feel that the applicant adequately characterized the geology of the site. The entire area of the site sits over a bed of limestone which allows water to percolate into the aquifer; discharged wastewater from the proposed site could potentially contaminate our already scarce drinking water supply.

If they expand their operations, meaning they add more concerts, more hours for restaurants or other uses, how does the planned drip irrigation capacity remain sufficient? They say they pan for 75 concerts. How does that translate into discharge per day? How is this measured? What if they exceed that amount?

My family's property is on a well, and because we are in such close proximity to the proposed site, Blizexas, LLC's drip irrigation system could contaminate our drinking water and all others'

within a few miles of the site. Additionally, there is an existing water well located on the property. How is the applicant proposing to protect the well from contamination from the site?

The applicant will need to bring in additional topsoil to maintain vegetation in the proposed irrigation field. Where will this topsoil come from and how will the area be brought up to grade to support the drip irrigation system? The area where the applicant is proposing to install the drip fields has greater than 10% slope. How is the applicant proposing to contain the runoff leaving the site? The drainage from this area feeds directly into Barton creek. How does the applicant propose to mitigate any nutrients from the wastewater from impacting our creeks? Allowing nutrients like nitrogen and phosphorus in the wastewater has the potential to create algal blooms and destroy the aesthetics and quality of our streams.

Impervious coverage and parking lot runoff

Virtually the entire site will be impervious coverage, with just a few inches of topsoil above the limestone. All water runoff from the site will hit the limestone and run into Barton Creek. The applicant is proposing to install a large parking lot for the music venue, which poses several concerns. How are they proposing to contain any stormwater runoff from the parking area? The runoff from the parking lot will contain oily waste from automobiles which also has the potential of running into the creek. As stated previously, all drainage from this area migrates straight down into the aquifer or runs off into the surrounding streams. It is inevitable that oils and other dangerous elements will reach Barton Creek. Compounding these concerns is the release of effluent from flooding. This region along Barton Creek is undeniably in a "flash-flood alley," and when the creek floods, as it does and will, effluent from the site will be released back into Barton Creek prior to proper treatment, causing harmful water conditions.

I am concerned about the runoff during rains and how will they control the runoff adequately so as not impact the ditches that run to Barton Creek? This will run right in front of our property.

Capacity and future expansion

Another concern with this proposed venue is its capacity and operating hours. Has Blizexas, LLC provided a maximum capacity, and will they operate outside of concert times? Any increase in the number of people on site at any given time will naturally increase already existing hazards. Increased capacity and operating hours will increase the use of toilets, which will add to the wastewater loads, causing more risks for hazardous water runoff and contamination.

Additionally, any potential expansion of the site, whether that be additions to the venue itself, construction of restaurants and other adjacent buildings, or the possibility of an enclosed structure(s). These scenarios would compound the wastewater hazards delineated above, significantly increasing health and safety risks. How is Blizexas, LLC proposing to manage future expansion in light of these hazards? Additional structures and expansions to the parking lot would decrease topsoil, increase impervious coverage, increase wastewater runoff, and exponentially increase dangerous contaminants in our well water, Barton Creek, and the Trinity Aquifer.

Where will all the cars park and will they provide storm water runoff controls to control runoff? In many cases at concerts excessive parking is on the street. There is no place to park along Fitzhugh Road. If they park across Fitzhugh, how will they control runoff? There have been rumors they pan to buy land across Fitzhugh from the venue. Has this been addressed?

Dangerous traffic conditions

The venue will be accessible via only Fitzhugh, Trautwein, and Crumley Ranch Road, roads that are unfit to withstand such large amounts of traffic. When the venue closes on a concert night, for example, thousands of cars will congest these small two-lane roads, significantly increasing the risk of car accidents, creating safety issues for emergency vehicles, and impacting residents' access to their properties. With a venue of this nature, adding alcohol to mix increases the likelihood of traffic-related incidents and injuries. Blizexas, LLC's parking lot proposal, which includes 2,000 parking spaces for the 5,000 seat venue, may lead to overflow parking, causing new sets of issues for residents and businesses to navigate.

Wildlife and recreational disruptions

This area is known for its beauty and natural wildlife activity, and a venue of this size and magnitude will destroy animals' habitats and drive the animals out of the area. Again, nearly all of the site is impervious coverage, which, along with the added amount of noise and light pollution, will disrupt the wildlife and recreational experiences of residents and visitors in the area. The Shield Ranch, for example, hosts their Camp El Ranchito on the weekends for children to enjoy outdoor activities. Blizexas, LLC's music venue will host concerts on the weekends, directly affecting the campers' experiences.

Growth

We feel that this type of growth is not supported in this area of Hays County, and a venue of this nature will significantly negatively impact the environmental quality of the area.

Sincerely,

Kevin Fleming
14230 Fitzhugh Road
Austin, TX 78736
512.633.0668
kevin@sq1.us

WQ
127674

Debbie Zachary

From: PUBCOMMENT-OCC
Sent: Wednesday, November 9, 2022 10:51 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: TCEQ Comments 2211092.docx

From: kevin@sq1.us <kevin@sq1.us>
Sent: Wednesday, November 9, 2022 9:20 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Kevin Fleming

EMAIL: kevin@sq1.us

COMPANY:

ADDRESS: 14230 FITZHUGH RD
AUSTIN TX 78736-6414

PHONE: 5126330668

FAX:

COMMENTS: See attachment

To: TCEQ

From: Kevin Fleming

RE: WQ0016111001 Blizexas

I live at 14230 Fitzhugh Rd, just down hill from the proposed development.

Concerns:

Wastewater:

I am concerned the capacity of the fields and the holding tanks will not be sufficient to hold the amount of wastewater that will be created. They made a presentation and stated the number of events is up in the air. How can they adequately design based on not knowing the full design loads? They say they may enclose an area and add more seats. How ma y and when?

They have restaurants/bars on site. How many and what impact will this be? Are they just open on weekends? Will they gravitate to all week days? Who knows the plan for sure and how will this be accounted for in their calculations?

For these reasons we have major concerns about overflow of the ponds and system that will make it to Baron Creek...along Fitzhugh Road. The odor of such an operation could be significant.

Are they to grow grass in the fields? It will be bone dry in the summer. Are they going to irrigate? That puts a major pressure on the water wells.

Runoff:

We live on Barton Creek. When we get heavy rains, the amount of sedimentation, trash, debris, trees, branches and other material barrels down Fitzhugh Road. The possibility of this site adding a lot more runoff and debris is a major concern. How will they detain the water? Will it be sufficient? If they add on how is that accounted for?

Will they filter the water and remove oils from the water before it gets into the creek? There could be thousands of cars parked on the site. Will this be on asphalt or grass or gravel? Will the oils from the vehicles drip into the soil?

The potential from erosion along Fitzhugh Road is high from this runoff. As it is, our driveway is inundated during high intense rains. This will only add to the problem and likely wash out our drive and erode the drainage ditch.

Water:

I have lived at this house since 1999. We have had several droughts that have dried up my well. I have had to jet the well, drill it deeper and will likely have to do so again. We are fearful that this draw in the aquifer will greatly impact all the wells in the area causing undue burden on us all for more expensive solutions. How will they draw enough water from the aquifer and not impact others in the area?

Traffic:

This may not be on TCEQ, other than the impact on noise, particularly at night after 10:00 when a lot of animals are out and about. This may drive them away from the area. Not sure how to study this impact.

We live on one of the most dangerous curves on Fitzhugh Road crossing Barton Creek. We have seen 10's of wrecks on this curve. By dumping thousands of cars on the road at 11:00 PM will be a major issue. Most will have been drinking and the road is simply not designed to handle the volume, the impaired drivers. There is no shoulder. No safe escape route.

Noise Pollution:

Impact on neighbors will be great. The hills of the area have a way of carrying sound for miles. We are 4-5 miles form Nutty Brown and could hear the music at night. This project is about a mile away. The area is full of residential homes. The impact will be intense.

The noise impact on animals will more than likely drive many away upsetting the ecological balance of the area. This needs to be properly investigated. This is a unique area and to lose the wildlife will be hurtful. We have an owl that lives on our property and has for yeard raising owlets. I am fearful the noise will drive them away. Not sure I can point to the technical issue, but intuitively I am concerned.

Light Pollution:

The lights will impact animals as they will leave the area. They are nocturnal for the most part, wanting dark for their travels. The overall quality of life in the area with light pollution will be impacted. We enjoy clear nights with ability to see stars. This will negatively impact that view.

Overall:

This development should not be at this location. There are just so many negative issues for such a large impactful project.

Misty Botello

From: PUBCOMMENT-OCC
Sent: Monday, September 11, 2023 10:54 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Stop Fitzhugh1.docx

PM
H

From: rhf@fritzlawfirm.com <rhf@fritzlawfirm.com>
Sent: Saturday, September 9, 2023 6:00 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MR Robert Henry Fritz

EMAIL: rhf@fritzlawfirm.com

COMPANY: Solaro Estate Winery

ADDRESS: 13111 SILVER CREEK RD
DRIPPING SPRINGS TX 78620-5234

PHONE: 8326613333

FAX:

COMMENTS: PLEASE SEE ATTACHED REQUEST FOR PUBLIC MEETING WITH REGARD TO WQ0016111001

This comment is presented on behalf of the Fritz Family et al. The Fritz Family is the owner and operator of a farm/ranch operation located approximately one mile from the proposed venue and application made the subject of this comment.

This comment pertains to domestic wastewater permit number WQ0016111001 filed by ELIZEXAS, LLC.

A public Hearing on the above referenced application is hereby requested.

A. HAYSCAD (Hays County Appraisal District)

Already at the initial stages of permitting the Hays County Appraisal District is seeing decreased land values, high listing numbers and almost no residential or land sales in a geography of approximately 2 miles surrounding the proposed venue site.

HAYSCAD has already reduced appraisals and is looking at potential tax losses in the tens of millions of dollars. (See B)

B. Local Identity-residential growth, healthy business, urban development

Hays County healthy growth like all successful regions in the United States is a direct result of residential attraction. People who want to live in the county. People do not relocate into an area with their family because of businesses. Businesses relocate into an area because of residential growth. People and families are moving to Hays County because of the community identity which includes wildlife, open spaces, a farming and ranching history, all levels of education, serenity, and safety.

People leave and move away from an area and take the businesses that support communities with them because of pollution of underground water, creeks and streams, devastation of wildlife, lack of water, social congestion, noise, all of which, from what we have reviewed has been proven will be the case, in reasonable legal probability, if subject permits are granted.

Political Responsibility and fall-out

As an attorney, when I am asked to render a comment on any sort of proposal, one of the specifics which I am expected to address is any possible future fall out and the risk versus benefit of the proposal.

In this instance I would bring to the attention of those with the task of making permitting decisions the following:

- After a project is complete and it is determined that the social cost associated with large gatherings of people including, violence, fire, accidental deaths, and

environmental degradation was higher than acceptable levels. There will be, as there always is, political and governmental repercussions in the form of lawsuits and governmental costs, all which could have been prevented through proper study and analysis by those individuals responsible for the permitting. Also, it is worth reminding ourselves that the adage "we will do better next time" isn't viable when irreparable harm has occurred based on decisions made with the facts before us at a time when the future harm is preventable.

No Reciprocity:

It is my understanding that the permitting request and project proposal is submitted by foreign interests from a region with arguably the highest level of environmental and social protections and restrictions. It is a fair question to ask whether the foreign residents whose interests will benefit from the Hays County project before us would allow the risk of environmental pollution, wildlife effect, light pollution, noise pollution, traffic congestion, wastewater runoff, and negative effect on citizens in their region. The answer is that they would never, under any circumstance, allow interests from Hays County to obtain a similar permit in their region.

The subject permits should not be granted.

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Friday, March 7, 2025 4:32 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

RFR

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: pat@sulfurcreek.com <pat@sulfurcreek.com>
Sent: Thursday, March 6, 2025 2:49 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: DR. Patricia K Gibson

EMAIL: pat@sulfurcreek.com

COMPANY: Retired

ADDRESS: 12700 Pauls Valley Road
Austin, TX 78737

PHONE: 5122881751

FAX:

COMMENTS: The musical venue is directly below and a mile to the northeast of my home of 50 years. The lay of the land and the prevailing winds in the spring and summer, will ensure the noise and light pollution from the venue will diminish the value of my property. The quality of the water in Barton Creek, which borders my property and provides some water to our home has decreased as more homes have been built upstream from our land. The planned 600+ housing development on the Hill Ranch will also impact the water quality as they are also requesting a dumping permit. These facilities will degrade Barton Creek and seriously impact the quality of water in both Zilker Part and Lady Bird Lake. Sewage disposal technology has improved dramatically in the last few years. Texas needs to require more advanced treatment. Please reconsider demanding a higher level of discharge quality and better noise reduction on this venue.

Debbie Zachary

From: PUBCOMMENT-OCC
Sent: Friday, November 18, 2022 3:01 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

From: pat@sulfurcreek.com <pat@sulfurcreek.com>
Sent: Thursday, November 17, 2022 7:42 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: DR. Patricia K. Gibson

EMAIL: pat@sulfurcreek.com

COMPANY:

ADDRESS: 12700 PAULS VALLEY RD
AUSTIN TX 78737-9507

PHONE: 5122881751

FAX:

COMMENTS: We have lived here above Barton Creek since 1973, having bought our land in 1970. Over the years, we have seen the growth of the area. This growth has led to dry wells, include ours, more algae in the creeks, and heavy traffic. The roads are currently suffering from excessive traffic, especially on the weekends as people travel from Austin to visit the many breweries on Fitzhugh Road. The road is narrow, dark, and populated with many suicidal white-tailed deer. Accidents are frequent. The proposed Fitzhugh Concert Venue is situated so that it will drain into Barton Creek

with quantities of water from both hard surface run-off and seepage from septic drain fields. In this area, there is insufficient spring flow in dry years to dilute the pollution from these sources. Additionally, the indication is they intend to drill to the lower level of the Trinity which is suffering from other pumping. Rainwater collection is common in this area due to the many dry or weak wells. There is no plan to utilize this water source at this venue. My husband and I request that you deny the permit for this venue.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 25, 2024 12:33 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: Chigh4616@gmail.com <Chigh4616@gmail.com>
Sent: Wednesday, January 24, 2024 10:02 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: DR. Cynthia Steele High

EMAIL: Chigh4616@gmail.com

COMPANY: Fitzhugh Neighbors

ADDRESS: 12107 TRIPLE CREEK DR
DRIPPING SPRINGS TX 78620-3700

PHONE: 5126274616

FAX:

COMMENTS: I request a contested case hearing regarding the wastewater permit requested by Blizexas for a concert event center with a 5000 seat amphitheater. The proposed site sits over a bed of limestone which allows water to percolates into the aquifer below contaminating the drinking water in the wells in the area. We rely on that water source for our well. The area is known to have several karst which essentially deliver slightly if at all filtered wastewater straight into the aquifer and/or nearby Barton Creek. These waters have been pristine for generations. We wish the water to remain uncontaminated for the next several generations. Please deny the permit and add me to the list of those who are willing to take on a contested case hearing. This development would ruin the beautiful Hill Country and its environmentally-sensitive lands and waters beginning with the first step of clearing the water filtering grasses, brush and trees that balance out rainfall so there is less flooding in the area and rain and water are cleansed.

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Cyndi High

Mailing Address: _____

Physical Address (if different): 12107 Triple Creek Dr.

City/State: Dripping Springs TX **Zip:** 78620

This information is subject to public disclosure under the Texas Public Information Act

Email: chigh4616@gmail.com

Phone Number: (512) 627-4616

- Are you here today representing a municipality, legislator, agency, or group? ☒ Yes ☐ No

  If yes, which one? Fitzhugh Neighbors

☒ **Please add me to the mailing list.**

☒ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Kimberly Muth

From: PUBCOMMENT-OCC
Sent: Monday, August 14, 2023 11:11 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: My TCEQ wastewater protest_WQ00161110011.pdf

PM

From: chigh4616@gmail.com <chigh4616@gmail.com>
Sent: Sunday, August 13, 2023 10:02 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: DR. Cynthia High

EMAIL: chigh4616@gmail.com

COMPANY:

ADDRESS: 12107 TRIPLE CREEK DR
DRIPPING SPRINGS TX 78620-3700

PHONE: 5126274616

FAX:

COMMENTS: Stop the Fitzhugh Concert Venue permit! They will pollute Barton Creek, how do you get that back?

Texas Commission on Environmental Quality (TCEQ)

Office of the Chief Clerk MC-105

P.O. Box 13087 Austin, Texas 78711-3087

Texas Commission on Environmental Quality (TCEQ)

Office of the Chief Clerk MC-105

P.O. Box 13087 Austin, Texas 78711-3087

August 14, 2023

Re: Opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue

Dear TCEQ Commissioners,

As a concerned resident, I wish to express my strong opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue. Part if not all of my acreage property is about 1 mile from the proposed venue and strongly believe there are abundant environmental risks with this behemoth in my neighborhood.

Barton Creek runs through my neighborhood and we enjoy its cooling waters. I can only imagine what damage will be done to these life-giving waters. We moved here because of it and the surrounding hill country with its lush green space sheltering and feeding abundant wildlife. This could be forever gone because a few monied people want to push their way in. The wastewater discharge will eventually flow into the creek and it will become polluted killing fish, etc., and will no longer support the wildlife who depend upon it to live.

Considering the venue will put an end to the lush Hill Country as we know it and the pollution will be rampant from the wastewater as it runs its path across neighboring properties over cavernous grounds to Barton Creek, I respectfully request that TCEQ deny the domestic wastewater permit for Blizexas LLC Music Venue. I also respectfully request that TCEQ organize a public meeting so these very worrisome issues with our neighbors in DS and SW Austin who are effected and the stakeholders.

Thank you. I wish to be contacted should you need more information on my neighbors and my concerns. Thank you for your willingness to be fair to the residents in this area and not just to invasive businesses.

Sincerely,

Dr. Cynthia High

12107 Triple Creek Dr. Dripping Springs, TX 78620

chigh4616@gmail.com

(23) Cyndi

TCEQ Registration Form

November 29, 2022

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Will & Cyndi High

Mailing Address: willhigh69@gmail.com 12107 Trimble Creek Rd Dripping Springs, TX 78620

Physical Address (if different): _____

City/State: Dripping Springs TX **Zip:** 78620

This information is subject to public disclosure under the Texas Public Information Act*

Email: willhigh69@gmail.com

Phone Number: (512) 567 4620

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☑ No

  If yes, which one? _____

☑ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 11:32 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: willhigh69@gmail.com <willhigh69@gmail.com>
Sent: Thursday, January 25, 2024 8:44 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: William High

EMAIL: willhigh69@gmail.com

COMPANY:

ADDRESS: 12107 TRIPLE CREEK DR
DRIPPING SPRINGS TX 78620-3700

PHONE: 5125674620

FAX:

COMMENTS: My name is Will High and I own and live at the property with the address 12107 Triple Creek Drive, Dripping Springs, Texas 78620 as my primary residence. The property is approximately 1 mile from the proposed development. I also own a well on this property that is approximately 1 mile from the proposed development. I would like to request a contested case hearing for the wastewater permit for the proposed development, as I have multiple concerns regarding the proposed development and the negative impacts it will have. Under the federal Clean Water Act, TCEQ is charged with maintaining the quality of our state's waters and protecting their existing uses. The Fitzhugh Music Venue, as currently proposed, would likely degrade Barton Creek and local groundwater quality in violation of the Clean

Water Act and state law through treated sewage and stormwater runoff. The draft wastewater permit issued by TCEQ does not require Nitrogen or Phosphorous removal and is extremely lax, especially given the environmentally-sensitive nature of the area within the EACZ. Nitrogen and Phosphorous are known to cause eutrophication of waterways, which threatens aquatic life. Barton Creek is already under nutrient stress in this area, with significant eutrophication present, especially during warm weather months. While the lax draft Fitzhugh Music Venue wastewater permit is concerning, perhaps an even bigger environmental issue is the high amount of impervious cover the developer has proposed, 66.45%. A heavily paved development with high impervious cover such as what is proposed would be more typical in an urban setting than in a rural area with an important contributing stream, Barton Creek, nearby. The high amount of impervious cover poses a threat to both groundwater and surface water quality and is inconsistent with current land uses in this rural area of Hays County. I wish to go on record opposing the Fitzhugh Music Venue proposed by Blizexas LLC. Regards, Will High 12107 Triple Creek Drive Dripping Springs, Texas

13

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Will High

Mailing Address: 1207 Triple Creek Drive Dripping Springs TX

Physical Address (if different): _____

City/State: ~~Tex~~ Dripping Springs TX **Zip:** 78620

This information is subject to public disclosure under the Texas Public Information Act

Email: willhigh69@gmail.com

Phone Number: (512) 827 4620

- Are you here today representing a municipality, legislator, agency, or group? ☑ Yes ☐ No

  If yes, which one? Fitzhugh Neighbors

☐ **Please add me to the mailing list.**

☑ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Kimberly Muth

From: PUBCOMMENT-OCC
Sent: Friday, August 18, 2023 2:13 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Texas Commission on Environmental Quality my concerns.docx

PM

From: willhigh69@gmail.com <willhigh69@gmail.com>
Sent: Thursday, August 17, 2023 8:19 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Will High

EMAIL: willhigh69@gmail.com

COMPANY:

ADDRESS: 12107 TRIPLE CREEK DR
DRIPPING SPRINGS TX 78620-3700

PHONE: 5125674620

FAX:

COMMENTS: Please see the attached file for my comments on permit application WQ0016111001

Texas Commission on Environmental Quality (TCEQ)
Office of the Chief Clerk MC-105
P.O. Box 13087 Austin, Texas 78711-3087

Texas Commission on Environmental Quality (TCEQ)
Office of the Chief Clerk MC-105
P.O. Box 13087 Austin, Texas 78711-3087

Re: Opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue
Dear TCEQ Commissioners,

I am writing as a concerned citizen to express my strong opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue. I reside one mile from the proposed venue and believe there are significant environmental risks associated with this project.

The potential impact on the Trinity Aquifer and Barton Creek is of particular concern. The health of the aquifer and corresponding creek and the well-being of local wildlife could be jeopardized by the wastewater discharge from the venue which will eventually find its way polluting the aquifer and creek.

Given these environmental concerns, I respectfully request that TCEQ denies the domestic wastewater permit for Blizexas LLC Music Venue. Additionally, I request a public meeting to address these pressing issues and afford the opportunity for local residents and stakeholders to voice their concerns directly to you and provide you the opportunity to respond in real time. Thank you for your attention to this matter. I am available for any further discussion or information you may require.

Sincerely,

Will High
12107 Triple Creek Drive
Dripping Springs, Texas
78620
512 567 4620
Willhigh69@gmail.com

Debbie Zachary

From: PUBCOMMENT-OCC
Sent: Wednesday, June 15, 2022 9:03 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: willhigh69@gmail.com <willhigh69@gmail.com>
Sent: Monday, June 13, 2022 9:39 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Will High

EMAIL: willhigh69@gmail.com

COMPANY:

ADDRESS: 12107 TRIPLE CREEK DR
DRIPPING SPRINGS TX 78620-3700

PHONE: 5125674620

FAX:

COMMENTS: This correspondence is to object to the pending permit for authorization of the disposal of treated wastewater at a volume not to exceed a daily average flow of 12,000 gallons per day via subsurface drip irrigation system of 2.75 acres. It has been brought to my attention that the site associated with this permit is for a music venue that is projected to hold some 5,000 people and have parking room for 2,000 vehicles. While I am concerned for the stress on our eco system, notably water but wildlife habitat and night sky preservation as well, I am very concerned that

the road infrastructure is not adequate to handle the increased traffic associated with a venue of this size. Fitzhugh Road and surrounding roads such as Crumley Ranch Road and Troutwein are rural two lane roads that are already overburdened as a result of the increase in businesses and residential communities in the Dripping Springs area and specifically along Fitzhugh, Crumley and Troutwein. This presents a road capacity issue struggling to accommodate existing and growing traffic, a safety issue directly related to the same capacity issue and further damage to the ecology from increased road runoff pollutants. Many of us are on wells so the increase use of water and stress on the aquifer for a venue of this size and road pollutants are problematic to say the least. Have environmental impact and infrastructure use studies been performed and if so, by which agencies? Regards, Will High

Misty Botello

From: PUBCOMMENT-OCC
Sent: Tuesday, August 29, 2023 3:56 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: rlh.home@att.net <rlh.home@att.net>
Sent: Tuesday, August 29, 2023 3:29 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Rachel Hill

EMAIL: rlh.home@att.net

COMPANY:

ADDRESS: 8310 HANBRIDGE LN
AUSTIN TX 78736-3010

PHONE: 5123836056

FAX:

COMMENTS: Please do not go forward with the plan to build a massive concert and event venue on Fitzhugh Road. The proposed venue would harm Barton Creek and significantly increase wastewater, traffic, noise, and light pollution in the surrounding areas. Please do not destroy our beautiful home and habitat for animals, plants, and all life by dumping large volumes of wastewater onto fields along the banks of Barton Creek. Please allow a public hearing so locals can have their input in what is ours. As a California company you'd think there would be more cars for the environment but I guess just like everyone moving here no one wants to preserve the true beauty of what makes austin so special.

Misty Botello

From: PUBCOMMENT-OCC
Sent: Tuesday, August 29, 2023 2:35 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: rlh.home@att.net <rlh.home@att.net>
Sent: Tuesday, August 29, 2023 9:29 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Rachel Hill

EMAIL: rlh.home@att.net

COMPANY:

ADDRESS: 8310 HANBRIDGE LN
AUSTIN TX 78736-3010

PHONE: 5123836056

FAX:

COMMENTS: Please do not go forward with the plan to build a massive concert and event venue on Fitzhugh Road. The proposed venue would harm Barton Creek and significantly increase wastewater, traffic, noise, and light pollution in the surrounding areas. Please do not destroy our beautiful home and habitat for animals, plants, and all life by dumping large volumes of wastewater onto fields along the banks of Barton Creek. Please allow a public hearing so locals can have their input in what is ours. As a California company you'd think there would be more cars for the environment but I guess just like everyone moving here no one wants to preserve the true beauty of what makes austin so special.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 22, 2024 3:06 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: michael.l.howard1000@gmail.com <michael.l.howard1000@gmail.com>
Sent: Monday, January 22, 2024 11:36 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Michael Howard

EMAIL: michael.l.howard1000@gmail.com

COMPANY: Self-employed

ADDRESS: 12630 PAULS VALLEY RD
AUSTIN TX 78737-9506

PHONE: 7708568612

FAX:

COMMENTS: I request a Contested Case Hearing for this permit. The large septic discharge, together with the wide use of impermeable covering for this music venue, will result in long term damage to Barton Creek, the aquifer, and all the wild growth (trees, etc.) and wildlife in the area. It may well undermine some of the roads in the area as well.

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Thursday, April 3, 2025 4:34 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: 2025.04.02_Fitzhugh Neighbors-GEAA Hearing Request.pdf

H
RFR

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: alyssa@txenvirolaw.com <alyssa@txenvirolaw.com>
Sent: Wednesday, April 2, 2025 4:56 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Lauren Ice

EMAIL: alyssa@txenvirolaw.com

COMPANY: Perales, Allmon & Ice, P.C.

ADDRESS: 1206 San Antonio St.
Austin , TX 78701

PHONE: 5124696000

FAX:

COMMENTS: Please See Attached.

PERALES, ALLMON & ICE, P.C.
ATTORNEYS AT LAW
1206 San Antonio Street
Austin, Texas 78701
(512) 469-6000 • (512) 482-9346 (facsimile)
info@txenvirolaw.com

Of Counsel:
David Frederick
Vic McWherter
Claire Krebs

April 2, 2025

Laurie Gharis, Chief Clerk
Texas Commission on Environmental Quality
Office of the Chief Clerk, MC 105
P.O. Box 13087
Austin, Texas 78701-3087

Via TCEQ Online Comment Form

Re: Request for Reconsideration and for a Contested Case Hearing Regarding the Application of Blizexas, LLC for Proposed Texas Land Application Permit (TLAP) No. WQ0016111001.

Dear Ms. Gharis:

On behalf of Fitzhugh Neighbors and the Greater Edwards Aquifer Alliance ("GEAA") (collectively, "Requestors"), I am submitting this request for reconsideration and a contested case hearing regarding the Application of Blizexas, LLC for proposed TLAP No. WQ0016111001 (hereinafter, the "Application"). This filing is in addition to any other comments or hearing requests offered by Requestors. Requestors may be contacted through my office at the address and telephone number indicated above.

I. Fitzhugh Neighbors and GEAA are "Affected Persons."

Fitzhugh Neighbors and GEAA satisfy TCEQ's rules regarding associational standing. *See* 30 Tex. Admin. Code § 55.205. That is, the organizations timely submitted comments on the Application; the organizations identify, by name and physical address, one or more members of each of the organizations would have standing to request a hearing in their own right; the interests

each organization seeks to protect are germane to their purpose; and neither the claim asserted nor the relief requested requires the participation of the individual members in the case.

Fitzhugh Neighbors is a non-profit organization whose purpose is to advocate for sustainable growth and development in the Fitzhugh Corridor and protect the natural environment of this Central Texas area. Fitzhugh Neighbors is a membership organization. GEAA is a 501(c)(3) non-profit organization that promotes effective broad-based advocacy for the protection and preservation of the Edwards and Trinity Aquifers, their springs, watersheds, and the Texas Hill Country lands that sustain them. GEAA is a membership organization. Both Fitzhugh Neighbors and GEAA have members who would be adversely affected by the Application.

Carrie and Witold "Vic" Napiorkowski are members of Fitzhugh Neighbors and GEAA. They own approximately 12.69 acres at 14909 Fitzhugh Road, Unit B, Austin, TX 78736, which is directly across Fitzhugh Road from the Applicant's property. The Napiorkowskis live on this property and their home is accessed via a shared driveway (i.e., an easement) from Fitzhugh Road, which is directly across the street from Applicant's proposed venue. The location of this private driveway/easement appeared on the Applicant's "affected landowners map" but was inexplicably unlabeled. **Attachment A** is a copy of the Applicant's map with the driveway/easement identified. **Attachment B** is a property map that shows the location of the Napiorkowskis' property. The property map also depicts the approximate route of the shared driveway/easement that runs north-south from Fitzhugh Road to the Napiorkowskis' property (and no less than six other properties) all the way to Barton Creek. The Napiorkowskis' home itself is about 1/2 miles from the Applicant's property. Additionally, their property extends south to the middle of Barton Creek, and the property drops in elevation as one travels from the Applicant's property on Fitzhugh Road south to Barton Creek, making the elevation difference between the site of the proposed facility

and the Napiorkowski property approximately 80 feet. The Napiorkowskis have observed several karst features on their property, including springs that burst with waterspouts during heavy rains. They also have a groundwater well on their property that they rely on for their personal drinking water.

The Napiorkowskis spend significant time outdoors on their property, enjoying the natural setting and Barton Creek. Mr. Napiorkowski walks with their dogs up the driveway/easement to Fitzhugh Road and down to Barton Creek on a daily basis, twice per day when the weather is nice. Their dogs play in the water of Barton Creek. They regularly host family gatherings and enjoy wading and swimming in the creek during the hottest months of the year. They enjoy having their five young grandchildren visit often, because they can picnic and play outside, wade in the Creek, and observe an abundance of wildlife and animals they keep on the property. They also regularly have guests to their property for Bible study and have a guest house they rent to visitors who want to enjoy the natural setting. The Napiorkowskis are concerned that the foul odors from the facility and connected infrastructure will impair their ability to enjoy being outdoors on their property with family and friends, and otherwise impair their use of their home, their guest home, their easement, and all of their property on Barton Creek. They are also concerned that the effluent will contaminate the groundwater they rely on for drinking water. They are also concerned, particularly given the gradient and the sensitive karst geology of the area, that the effluent will contaminate stormwater and groundwater that will flow to Barton Creek and make it unsafe or unsuitable for them, their young grandchildren, and other guests to swim in.

Sue and Tom Munns are members of Fitzhugh Neighbors. They own approximately 25 acres of property at 14909 Fitzhugh Road, Unit D, Austin, TX 78736, which is directly across Fitzhugh Road from the Applicant's property. The Munns live on this property and their home is

accessed via the same shared driveway (i.e., easement) used by the Napiorkowskis and other neighbors, and which is directly across the street from the Applicant's proposed venue. **Attachment B** is a property map that shows the location of the Munns' property, and the approximate route of the part of the shared driveway/easement that runs north-south from Fitzhugh Road all the way to Barton Creek. The Munns have lived on this property since 1997 and have always spent significant time outdoors. They raised their three kids on the property and now enjoy having their kids and young grandchildren visit. During these regular visits, they often spend time together outdoors. The Munns take regular walks and jogs up the easement to Fitzhugh Road for exercise. They have a large variety of wildlife on their property, particularly birds and butterflies. The Munns especially enjoy sitting or walking quietly with their young grandchildren to enjoy the natural setting, observe wildlife, and identify native plants together. They also enjoy spending time wading and swimming in Barton Creek. The Munns have seen springs on their property, which are almost always flowing, more so following rain events. Although they are fortunate to rely on rainwater, they also have a shallow well on their property that they treat as a potential back up source of water.

The Munns have several concerns with the Application. They are concerned that foul odors from the Applicant's property will impair their ability to enjoy the outdoors on their own property and in Barton Creek with friends and family. They are concerned that the effluent could contaminate stormwater and groundwater and, given that the gradient of the property drops in elevation from the Applicant's property to the Munns property and then to Barton Creek, that the effluent could contaminate Barton Creek via groundwater flow or stormwater runoff. The Munns have a pond on their property that the grandkids will recreate in when full, in addition to Barton

Creek, but if the wastewater disposal is allowed, the Munns would have serious concerns about allowing their grandkids to recreate in the pond or Barton Creek.

Dave and Catherine D'Abate are members of Fitzhugh Neighbors. They are also the son-in-law and daughter of the Munns. They own approximately 1 ½ acres at 14909 Fitzhugh Road, Unit F, Austin, TX 78736, where they built a home in 2017. **Attachment B** shows the location of the D'Abates' property and the approximate route of the portion of the shared driveway/easement that runs north-south from Fitzhugh Road to Barton Creek that they regularly utilize. The D'Abates live there with their two young children and they spend significant time outdoors on their property, the Munns' property, and in Barton Creek. They D'Abates moved to the property specifically because of the natural environment and the opportunity for their children to spend meaningful time playing outside. They are one of six homes that share the same driveway (easement) as the Napiorkowskis and the Munns. They take regular walks and scooter rides with their children up and down the driveway to grab the mail and enjoy exercise. They regularly canoe and wade in Barton Creek, especially during warmer months, and enjoy observing ducks and other birds and wildlife that rely on the Creek.

The D'Abates have observed a steep downhill slope from the Applicant's property, across the Munns, to their property, and Barton Creek. The stormwater runoff is noticeable and can be significant in volume and velocity even under typical rain events. They are concerned that the effluent could contaminate stormwater, which would run downhill over their property and into Barton Creek, making it unsafe for their children and unsuitable for wildlife. They are also concerned that foul odors from the facility will impair their ability to enjoy their property, particularly to enjoy time outside with their kids and extended family.

Richard and Tracey Sorenson are members of Fitzhugh Neighbors and GEAA. The Sorensons own approximately 75 acres of land located at 11400 Crumley Ranch Road, Austin, TX 78738, where they have lived for more than nine years. Their property is approximately 0.1 miles from the Applicant's property and is depicted on **Attachments B and C**, which are property maps for Hays and Travis County, respectively. The Sorensons spend considerable time outdoors, enjoying the natural beauty of the area. They maintain their property pursuant to a comprehensive certified wildlife management plan in order to support a variety of species. In order to maintain this certification, the Sorensons regularly walk the property to assess the health of the ecosystems they are working to support and perform maintenance as needed. They also enjoy taking walks around the property multiple times each day to observe the wildlife and take their dogs for walks. The Sorensons regularly enjoy other outdoor activities, including gardening and landscaping, and hosting family and friends for visits. Their children and grandchildren regularly visit, and it is important for the Sorensons that the outdoors be an inviting and enjoyable place for their visits. They also regularly have friends over for target practice outside.

The Sorensons care deeply about keeping their property as well as the surrounding area clean, as it is important to them that all neighbors have access to the pristine nature that makes the community such a special place. As an example of the interest they have in protecting the wider community, four or five times each year, Mr. Sorenson spends significant time picking up trash along Crumley Ranch Road. The Sorensons are concerned that the foul odors from the facility and connected infrastructure will impair their ability to enjoy being outdoors on their property and engage in each of these activities they enjoy together and with family and friends. Their concern is heightened given that the wind rose in the Application indicates that the prevailing winds blow from the south and southeast, and their property and their home is directly northwest of the

proposed facility. Though the Sorensons currently rely on rainwater for their home, they have a property interest in the groundwater beneath their land, and are also concerned that the effluent could contaminate their groundwater supply.

Terri and Tim Van Ackeren are members of Fitzhugh Neighbors. The Van Ackerens own approximately 165 acres of land where they have lived for more than 18 years. Their property is located at Lazy T Ranch, 10017 Crumley Ranch Road, Austin, TX 78738, and is depicted on **Attachment C**. They manage their property under a certified wildlife management plan in order to support a wide variety of species they have observed there, including whitetail deer, swift foxes (several pairs), Rio Grande turkey, frogs, fish, and over 40 species of birds, 33 of which are migratory, as determined by the last annual professional breeding bird survey conducted last May. Their property also includes documented habitat for the Golden-cheeked warbler. As a part of implementing their wildlife management plan, the Van Ackerens regularly spend considerable time outdoors maintaining the ecology they have worked hard to cultivate. The Van Ackerens also keep horses on their property, which they enjoy riding and training. They also have guest accommodations and regularly host outdoor gatherings of friends and family who enjoy the natural setting. For example, last year, they hosted about 45 people for an eclipse viewing party.

Among the impacts from this Application, the Van Ackerens are especially concerned about the odors from the wastewater facility, particularly since their property is only about one mile directly north of the Applicant's property, and the Application's wind rose shows the prevailing winds are from the south. The Van Ackerens also have two wells that serve five homes on their ranch. They are concerned that the effluent may seep into the groundwater and the high nitrates and other pollutants may contaminate the groundwater supply on which they rely and make it unsafe to drink. They also have observed several springs and seeps that flow year-round near

Rocky Creek, a tributary to Barton Creek that flows across their property. Given this sensitive karst geology, they are concerned with the potential for contaminated groundwater, as well as contaminated stormwater runoff from the land disposal sites, to make its way to Rocky Creek and Barton Creek. These streams are currently pristine and highly susceptible to impacts like unsightly algae blooms from nutrient enrichment.

Jim Spry is a member of Fitzhugh Neighbors. Since 2011, Mr. Spry has owned approximately 100 acres at 14409 Fitzhugh Road, Austin, TX 78736. His property is approximately 0.3 miles southeast of the Applicant's property, and is depicted in the map on **Attachment B**. He originally purchased the property in order to set up the Loralee Foundation, which he helps to manage. The Loralee Foundation has a ranch on the property, and which includes several homes for employees of the Foundation who live onsite. The Foundation allows charities to host events at the property at no cost to them. The natural setting was a significant reason Mr. Spry chose this property for the Foundation, and the success of the Foundation's site is due in large part to the natural setting they can offer. The Foundation's site is centered around numerous outdoor activities, such a softball field, volleyball court, horseshoes, horseback riding, and swimming and playing in Barton Creek. The Foundation hosts a wide variety of charities at the property, including organizations that assist foster children, mothers of children with development challenges, young entrepreneurs, those struggling with drug and alcohol dependence, and suicide awareness and prevention organizations. More about the Loralee Foundation is available on their website: http://www.loraleefoundation.org/. Needless to say, this property provides more than just a meeting space to these charitable organizations and the clientele they serve, but a peaceful retreat where they can focus on their goals and missions.

Mr. Spry moved to the property approximately six or seven years ago. Several of his family members and their families also live on the property. Mr. Spry regularly enjoys spending time outside. He walks his property at least three times each week to enjoy the exercise. Mr. Spry also regularly hosts gatherings of family and friends on this property. They ride horses, fish and swim in the creek, and enjoy outdoor activities together. He has hosted family reunions and weddings on his property. All of his gatherings involve significant time outside, because the setting is so beautiful and natural. Barton Creek is clear and pristine as it flows through his property. Mr. Spry has personally observed several springs and seeps on Barton Creek with water visibly flowing from them and into the Creek. Altogether, the Foundation's facilities and the family homes on his property rely on seven groundwater wells as their only source of drinking water. Since buying the property, he has experienced five major floods. Mr. Spry is concerned that pollution to the aquifer could impact the wells and water supply on his property, and that nutrients or other contaminants could flow through groundwater or floodwaters to Barton Creek where it could cause algae blooms or destroy the natural beauty of the Creek, making it unpleasant or unsafe for him and his family and friends to swim and fish in. He is also concerned that odors from the facility and disposal sites will impair his ability to enjoy his outdoor activities and will impair the activities the Foundation has to offer the charities it serves.

II. Fitzhugh Neighbors and GEAA Continue to Dispute Issues that were Raised During the Public Comment Period.

Fitzhugh Neighbors and GEAA provide the following relevant and material disputed issues of fact that were raised by the organizations during the public comment period and that are the basis of this hearing request. *See* 30 Tex. Admin. Code § 55.201. Requestors respectfully request the following issues be referred to hearing.

A. Whether the Draft Permit will be protective of surface water quality (RTC 1, 11, 12).

The RTC acknowledges that the proposed facility is located in the Barton Creek watershed and in the Edwards Aquifer Contributing Zone. And though this means that the Draft Permit has the potential to impact surface waters if partially treated effluent contaminates shallow groundwater and is released to surface water through seeps and springs in tributaries to Barton Creek and Barton Creek itself, the RTC does not address the field monitoring studies or the gain/loss study in Barton Creek conducted by the City of Austin that show the likelihood of adverse impacts to surface water quality (and groundwater quality). Nor does the RTC address the numerous comments based on first-hand observations that springs and seeps are commonplace on Barton Creek and its tributaries. The field monitoring studies conducted by the City of Austin—and referenced in the City's January 29, 2024 comments (included as **Attachment D** for convenience)—were performed in areas with thicker soils that were better suited for irrigation of treated wastewater effluent than those at the site of the proposed facility. These studies found detectable impacts in springs and surface waters downgradient from reclaimed irrigation areas, including increased nutrients and algae growth. Also of particular concern is that the City's gain/loss studies that show Barton Creek in the precise area of the proposed facility is gaining flow from shallow groundwater discharge, meaning a hydrologic connection between surface water and groundwater exists and must be evaluated. Modifications to the typical effluent limitations may need to be considered if necessary to demonstrate that both surface and subsurface fresh water will not be polluted by the application of wastewater by the subsurface area drip dispersal system. *See, e.g.*, 30 Tex. Admin. Code §§ 222.85, 309.2, .3, .12. Because this information has not been addressed and remains in dispute, this issue should be referred to a contested case hearing.

B. Whether the Draft Permit will be protective of groundwater (RTC 3, 8, 11, 12).

The RTC makes a puzzling claim that the Edwards Aquifer Recharge Zone is approximately 25 miles downstream from the proposed site of the facility, but the basis for this conclusion has not been provided. Upon review of TCEQ's online Edwards Aquifer Viewer,[1] it appears the Edwards Aquifer Recharge Zone is only about seven miles from the proposed site. Regardless, for many of the same reasons that the Application and the RTC have failed to demonstrate the Draft Permit will be protective of surface water quality, they have also failed to demonstrate the Draft Permit will be protective of groundwater quality. The RTC assumes effluent will not migrate to groundwater, and so the analysis stops there. But this is not consistent with the findings from the City of Austin studies which show irrigated effluent routinely migrates to groundwater, and that the proposed location for this facility and irrigation fields are particularly susceptible to groundwater contamination, and that there is a clear hydrologic connection to surface waters through observed springs and seeps. Nevertheless, the RTC does not address these findings and the Application does not demonstrate the subsurface drip system—subject only to the effluent limits in the Draft Permit—will not pollute groundwater. *See* 30 Tex. Admin. Code § 222.85. Therefore, this issue remains in dispute and should be referred to a hearing.

C. Whether the Application complies with TCEQ Design Criteria requirements, including whether there is a need for the facility at the requested capacity (RTC 14).

It is not clear that the RTC addressed comments regarding whether the Applicant has properly determined the wastewater design values and required storage and otherwise complied

---

[1] *Available at:* https://experience.arcgis.com/experience/fbd266a3fbce4adc83e890480ac7b135.

with design criteria found in TCEQ's rules at Title 30, Chapter 222, Subchapter D. Therefore, it remains in dispute and the issue should be referred for a contested case hearing.

The RTC does address comments regarding need and regionalization. However, Requestors maintain the Application does not demonstrate that there is a need for the facility pursuant to our state regionalization policy. Therefore, this issue should also be referred to a contested case hearing.

D. Whether the Application demonstrates that the irrigation system will be protective considering stormwater run-on and runoff (RTC 5).

Requestors respectfully disagree with the RTC that the TCEQ does not have jurisdiction over flooding. *See* 30 Tex. Admin. Code § 309.13. Additionally, pursuant to 30 Tex. Admin. Code § 222.17, all applicants must submit an engineering report that includes site topography and include storm water run-on prevention and storm water runoff accommodation. This issue remains in dispute and should be referred to a contested case hearing.

E. Whether the Draft Permit complies with siting requirements, including Recharge Plan requirements (RTC 7, 10).

Requestors respectfully disagree with the RTC that all soils within the proposed land application area are suitable for plant growth, and if maintained, will control erosion and prevent pollutants from moving beyond soil depth. Likewise, Requestors disagree that Applicant's Recharge Feature Plan is reliable. This issue remains in dispute and should be referred to a contested case hearing.

F. Whether the proposed facility will cause nuisance odors, algae growth, and other nuisance issues that will impair the ability of neighbors and others to use their property and enjoy Barton Creek.

Pursuant to 30 Tex. Admin. Code §§ 309.13(e) and 222.151, Applicant is required to abate and control odor, and conditions at the facility or drip dispersal zones that contributes to an odor are prohibited. Though Requestors raised odors as a concern, the RTC did not specifically address

odors abatement and control. Therefore, this issue remains in dispute and should be referred to a contested case hearing.

G. Whether public notice of the Application was proper (RTC 15).

Though the RTC acknowledges that TCEQ's notice rules required mailed notice of the NORI and NAPD to landowners with property surrounding the Applicant's property (as well as persons on the mailing list maintained by the Office of the Chief Clerk), the RTC stops there. The RTC does not address the failure of the Application to identify the property boundaries of the shared driveway (i.e., easement) that no less than six landowners share directly across Fitzhugh Road from the proposed facility. Though some of those property owners have otherwise received notice and are identified in this hearing request, it is not clear that all landowners have received notice or been informed of the opportunity to participate in these proceedings. This issue remains in dispute and should be referred to a contested case hearing.

H. Whether the Application demonstrates that Applicant owns all the property necessary to construct the facilities.

Requestors pointed out in comments that, according to Hays CAD, another entity entirely owns property where the buildings and source of much of the wastewater will originate is located and it is not clear from any site plan or line layout that the Applicant owns the property necessary to locate the facility. This issue remains in dispute and should be referred to a contested case hearing.

I. Whether the Draft Permit will protect wildlife, livestock, birds, and other animals, including threatened and endangered species (RTC 4, 6).

As previously explained, the RTC relies on assumptions that effluent will not leave the soil in the disposal area to conclude that "there should not be any harmful impacts to wildlife," but this is not a substitute for a thorough review of the Application, siting requirements, design criteria, proposed effluent limits, nor is it definitive. Whether the Draft Permit will protect wildlife,

livestock, and birds, including threatened and endangered species remains in dispute and should be referred to a contested case hearing.

III. Conclusion

For the reasons described above, Requestors urge the Commission to reconsider the Application and, upon reconsideration, to deny Blizexas, LLC's Application for TLAP No. WQ0016111001. In the alternative, the Fitzhugh Neighbors and GEAA request a contested case hearing with regard to the Application.

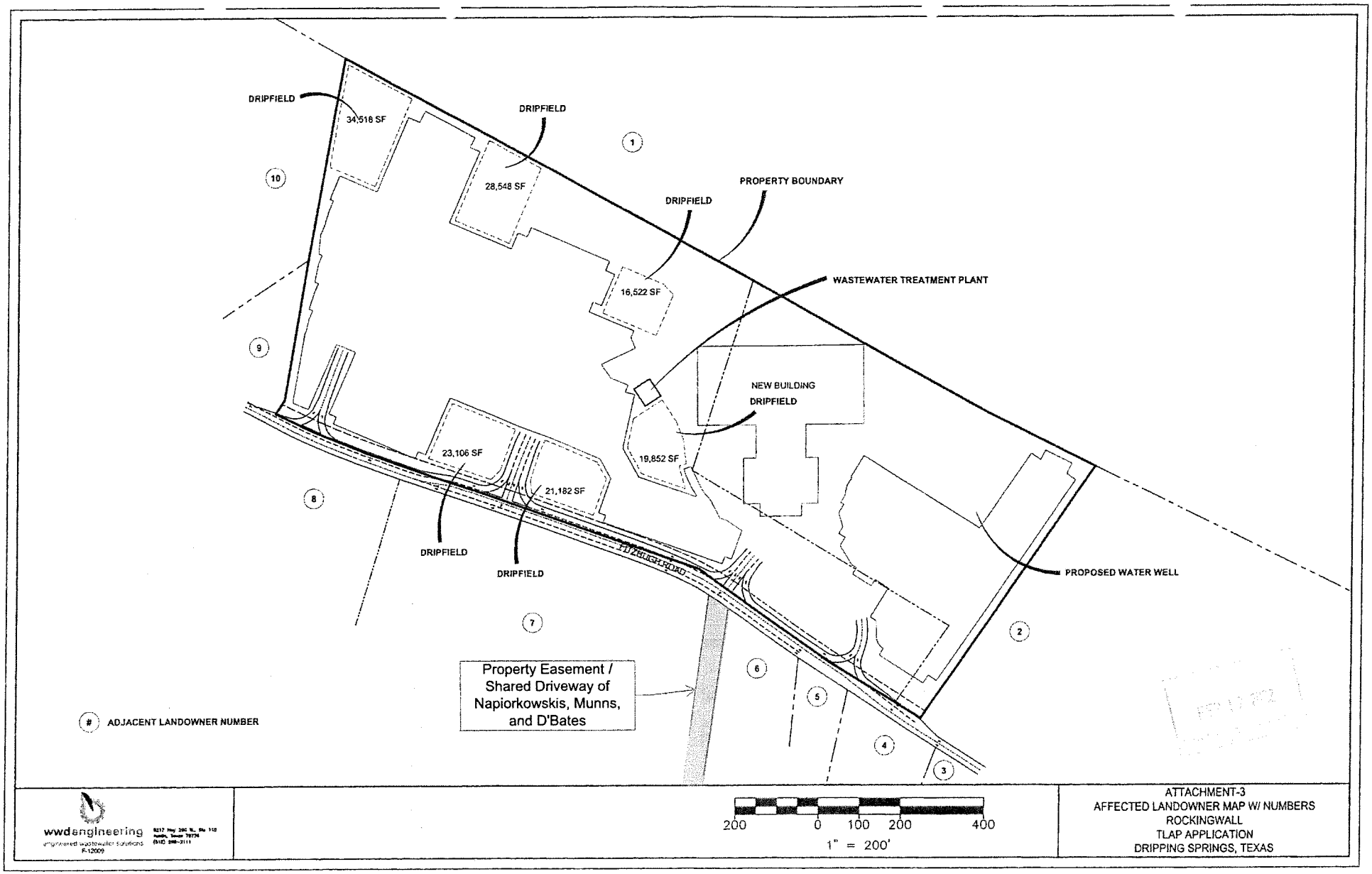
Please contact me with any questions.

Respectfully submitted,

/s/ Lauren Ice
Lauren Ice
State Bar No. 24092560
lauren@txenvirolaw.com
PERALES, ALLMON & ICE, P.C.
1206 San Antonio Street
Austin, Texas 78701
512-469-6000 (t) | 512-482-9346 (f)

Counsel for Fitzhugh Neighbors and Greater Edwards Aquifer Alliance

ATTACHMENT A

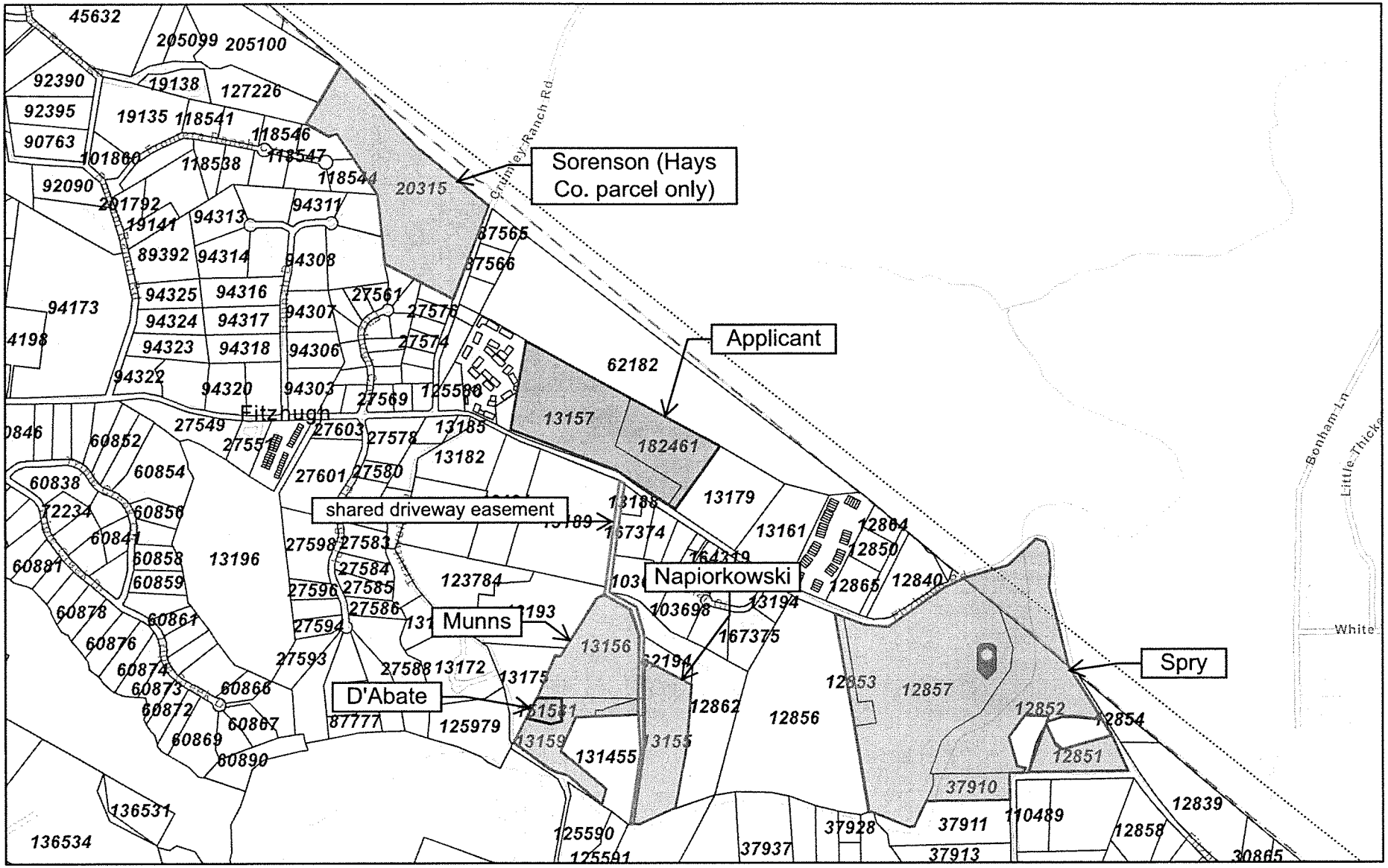


wwdengineering
engineered wastewater solutions
F-12009

ATTACHMENT-3
AFFECTED LANDOWNER MAP W/ NUMBERS
ROCKINGWALL
TLAP APPLICATION
DRIPPING SPRINGS, TEXAS

ATTACHMENT B

Hays CAD Map - Blizexas



4/2/2025, 12:17:59 PM

Parcels

Texas Counties

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

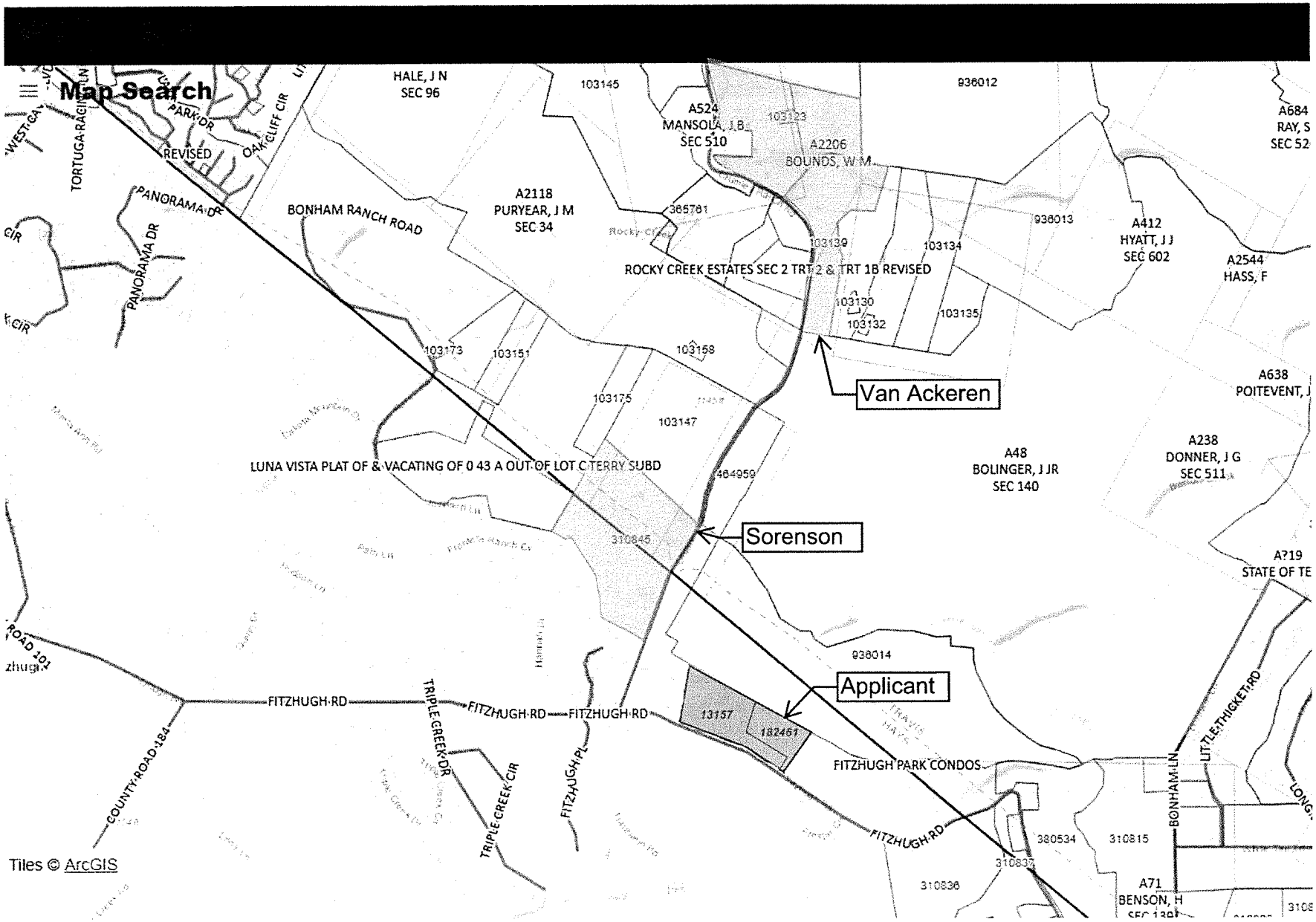
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Hays County Appraisal District, BIS Consulting - www.bisconsulting.com

Disclaimer: This product is for informational purposes only and has not been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of boundaries.

ATTACHMENT C

TRAVIS CENTRAL APPRAISAL DISTRICT
TRAVIS COUNTY, TEXAS



ATTACHMENT D

City of Austin
Founded by Congress, Republic of Texas, 1839
Watershed Protection Department
P.O. Box 1088, Austin, Texas 78767

January 29, 2024

Laurie Gharis, Chief Clerk
Office of the Chief Clerk
Texas Commission on Environmental Quality
P. O. Box 13087, MC-105
Austin, Texas 78711-3087

VIA ELECTRONIC SUBMITTAL

SUBJECT: Submittal of Written Comments
Blizexas LLC - Rockingwall Ranch Proposed Permit No. WQ0016111001

Dear Ms. Gharis:

By this letter, the City of Austin (City) submits its written public comments regarding the application of Blizexas LLC for a new Texas Land Application Permit (TLAP), and Draft Permit No. WQ0016111001. The City submits these comments because the environmental sensitivity of the area subject to this permit is not adequately addressed in the application and draft permit. This letter also provides information on the potential impacts to water quality in similar settings for use by TCEQ in modifying the draft permit. Although a discharge permit is clearly not appropriate for this area, and a subsurface area drip dispersal system (SADDS) may be the best alternative, many improvements to the draft permit can be made to protect water quality. The City can be reached by mailing correspondence to my address on this letterhead and by telephone to my direct number, (512) 974- 2212.

The area to be used for land application of treated municipal wastewater covered by the proposed TLAP, Permit No. WQ0016111001 is in the Edwards Aquifer Contributing Zone and has the potential to impact surface waters if partially treated effluent is released to shallow groundwater seeps and springs in tributaries. Specifically, the SADDS areas likely drain into tributaries of Barton Creek upstream from the Barton Springs Segment of the Edwards Aquifer. The City has conducted several field monitoring studies of similar systems in areas with thicker soils better suited to the attenuation of treated effluent and found detectable impacts in springs and surface waters downgradient from reclaimed irrigation areas. We have attached reports of these studies for your review (Attachment 1 – Reclaimed water irrigation water quality impact assessments). Of primary concern are nutrient impacts to algae growth in these surface waters. The City has also conducted gain/loss studies in Barton Creek downstream from the proposed permit. These indicate that the reaches downstream are gaining flow from shallow groundwater discharge which could be hydrologically connected to the SADDS areas. Our recent report describing these findings is attached (Attachment 2 – Upper Barton Creek Gain/Loss Study at Shield Ranch). The combined weight of evidence calls for more stringent permit requirements in these sensitive areas.

The City requests the following points of concern be addressed in the updated draft permit and mitigation practices defined and implemented prior to initiation of wastewater effluent irrigation. With these improvements and attention to operation and maintenance, discharges to the groundwater system and surface waters can be minimized. Additionally, we would like to work with the applicant and TCEQ to design a monitoring plan for the site that would provide data on the impacts to water quality downstream from ongoing operation of the facility. The monitoring lysimeters proposed in

The City of Austin is committed to compliance with the Americans with Disabilities Act.
Reasonable modifications and equal access to communications will be provided upon request.

the application are a good start, but additional monitoring is warranted. There is currently limited monitoring data available for SADDS systems in marginal soils in the Barton Springs Zone.

We would appreciate the opportunity to review the revised draft permit with TCEQ responses to comments incorporated.

A. Soils

Comment: Soils in the drip dispersal areas are Brackett - Rock outcrop - Comfort complex BtD and Doss silty clay DoC as shown in the application. The Comfort soils are a shallow complex of extremely stony clay and gravelly clay and gravelly clay loam over limestone bedrock. These soils have severe limitations for treatment or disposal of wastewater effluent. The Brackett Soils in the proposed irrigation areas also have severe limitations for sanitary facilities and water management of shallow depth to rock, large stones, and slow percolation. The Doss soils have limitations for shallow depth to bedrock, shallow rooting zones, and slow percolation (USDA soil survey for Hays County). In the permit application all dispersal drip field soils are represented by one composite sample for each depth fraction. Given that these soils are likely to be very heterogenous, further sampling is warranted. All these conditions combined with the sensitivity of the watershed require attention to design and construction of the dispersal system beyond what is required in other areas of the state where the natural soils are more suitable for nutrient uptake.

Recommended Changes:

- Require maintenance of a 12-inch minimum soil depth of suitable soils below the dispersal system to sustain a viable root zone, support crop growth and maximize uptake of wastewater effluent and nutrients.
- Require monitoring of actual irrigation application rates adequate for uptake of wastewater effluent andnutrients, such that percolation below the root zone does not occur.
- Eliminate bedrock outcrop areas from total irrigation acreage. Determine if remaining areas are adequate to meet the required application rate.
- Imported soils will likely be necessary to reach the specified vertical separation distances below and above the drip dispersal system. Built drawings indicating where soil is added should be included as a permit requirement.
- Periodic reevaluation of the soil depth and quality over time should be incorporated into special conditions in the permit.

B. Geology

Comment: The Upper Glen Rose Limestone is present at the surface on-site and throughout the area, including in the channel of nearby Barton Creek. The Glen Rose consists of hard limestone alternating with more marly beds which weather to form a characteristic stair-step topographic profile on hills. While not as aggressively weathered as the overlying and more well-known Edwards Group, the Glen Rose has substantial karst development and hosts the Trinity Aquifer which provides water to thousands of people in Central Texas in addition to supplying the springs that sustain baseflow in Upper Barton Creek and its tributaries in this area. The Groundwater Quality Report submitted with the permit application noted impacts to wells were unlikely but did not mention potential impacts to nearby springs. The tributary to Barton Creek located directly north of the SADDS areas had measurable flow into Barton Creek in June and July of 2019 (Sydow et al. 2024).

Recommended Change:

- Inspect, review, and evaluate surface and subsurface rock features prior to installation of drip irrigation system and construction of treatment facilities, storage pond, and all underground utilities.

C. Treatment Plant and Effluent Limits

Comment: The treatment system is proposed to be a conventional activated sludge plant including flow equalization, bar screens, an aeration basin, final clarifier, a tertiary media filter and chlorine contact chamber. The application stated that the plant is capable of effluent limits of 10 mg/L BOD 15 mg/L TSS (TCEQ-10054 pg 25 of 80). In addition, the design criteria used in calculations indicates the plant will be capable of an effluent limit of 10 mg/L TSS (TCEQ-10054 Attachment 14). However, the draft permit is written for less stringent limits of 20 mg/L BOD and 20 mg/L TSS (Draft WQ0016111001 pg 2). The subsurface area drip dispersal system would operate better at the designed effluent of 10 mg/L BOD and 10 mg/L TSS with fewer soil clogging and maintenance problems than the draft permit of 20 mg/L BOD and 20 mg/L TSS. Although this limit may be appropriate in other parts of the state, more stringent limits would be warranted in this sensitive area with the noted soil limitations. We would recommend that the design criteria be used as the effluent limits. We would also recommend that modifications be considered to the plant to maximize the nutrient removal capabilities. Low cost and operational changes to conventional activated sludge treatment should be considered such as those recommended in Water Research Foundation Project No. 4973 (Neethling, Falk, and Evans, 2023).

D. Effluent Irrigation and Management Plan

Comment: While the default effluent application rate of 0.1 gpd/ft^2 appears to be low enough on an annual basis, and the vegetative cover is capable of necessary nutrient uptake, no storage or water balance calculations are required for SADDS systems. Given the sensitivity of the area and the improvements in hydrological and water quality models over the years since the SADDS rules were written, it would be warranted to spend more time evaluating the actual performance of the system. Like spray irrigation, a daily water balance using long-term hydrological data would provide some confidence that no discharges could be expected. Alternately, any unit area models such as GLEAMS or watershed models such as SWAT could be used to do the same accounting. Even if it is not appropriate for the applicant to provide this, the TCEQ could incorporate such models into their review process.

Comment: On Attachment 8 – Buffer Zone Map, the Wastewater Treatment Plant is identified as the boundary of all units. The150 ft buffer indicated is not from the treatment units, each treatment unit is not shown, and the distance from each treatment unit to the property boundaries is not shown as required in Section 3. A. TCEQ-10053 (10/31/2022 Page 17 of 24). A minor detail given is that the buffer meets requirements, but the figure does not meet the language of the permit application.

Recommended Changes:

- Log actual water balance daily with application/storage records to determine that irrigation rates do not exceed evapotranspiration (ET) rates of cover crop.
- Verify adequacy of 3-day storage volume provided in the storage pond and account for seasonal differences during cool and rainy seasons through use of long-term hydrological data and a water balance for the SADDS system.

- Determine location and installation of additional soil moisture sensors to determine areas of soil saturation. Evaluate performance of such sensors over time.
- For each phase of development, establish 100% of design vegetation cover for that area prior to initiation of irrigation.
- Determine mitigation measures to eliminate presence and development of preferential flow percolating into shallow groundwater systems.

In summary, effluent irrigation on lands in the sensitive Barton Springs Contributing Zone, especially so close to Barton Creek, should be undertaken carefully and in a manner that fully protects surface waters and recharge to the Edwards Aquifer. TCEQ's draft permit should include additional permit provisions requiring modifications to the proposed design and operations of the irrigation system to protect the water resources at risk.

If you have questions, please contact me at (512) 974-2212.

Sincerely,

Katie Coyne
Environmental Officer
Watershed Protection Department
City of Austin

References

Clamann, A, and S Hiers, A Richter, M Scoggins, C Herrington. 2014. Reclaimed water irrigation water quality impact assessment, Phase 1 Summary of Results. City of Austin Watershed Protection Department. DR-15-03. 17 p.

Neethling, J and M Falk, E Evans. 2023. Guidelines for Optimizing Nutrient Removal Plant Performance. HDR, Inc. for The Water Research Foundation. Project No. 4973. 613 p.

Porras, A, and A Richter, A Claman, S Hiers, M Scoggins, C Herrington, W Burdick, S Sudduth. 2016. Reclaimed water irrigation water quality impact assessment. City of Austin Watershed Protection Department. SR-16-06. 50 p.

Richter, A, and S Hiers. 2017. Comparison of water quality at locations currently receiving wastewater effluent irrigation to locations planned for future wastewater effluent irrigation. City of Austin Watershed Protection Department. DR-18-01. 18 p.

Sydow, L. and S Zappitello, K Parker, A Guidry. 2024. Upper Barton Creek Gain/Loss Study at Shield Ranch. City of Austin Watershed Protection Department. RR-24-01. 20 p.

cc:
Jorge L. Morales, P.E., CFM, WPD Director
Firoj Vahora, TCEQ Municipal Permits MC-148

The City of Austin is committed to compliance with the Americans with Disabilities Act.
Reasonable modifications and equal access to communications will be provided upon request.

Attachment 1

Reclaimed water irrigation water quality impact assessments

City of Austin
WATERSHED PROTECTION

Reclaimed water irrigation water quality impact assessment, Phase 1 Summary of Results

DR-15-03; December 2014

Andrew Clamann, Scott Hiers P.G., Aaron Richter E,I,T,, Mateo Scoggins and Chris Herrington, P.E..

City of Austin
Watershed Protection Department
Environmental Resource Management Division

Introduction

Watershed Protection Department staff collected water samples to enable evaluation of the potential water quality impacts on surface and ground water resources from the irrigation of reclaimed water provided by City of Austin wastewater treatment facilities within the critical water quality zone and floodplain as defined by the City of Austin Land Development Code. Reclaimed water irrigation adjacent to creeks may migrate to shallow groundwater and into creeks through subsurface water flow, may be irrigated directly into creeks during improper spray application, or may load constituents into riparian soils that exceed natural assimilative capacities and thus be transported to creeks during runoff events. The following is a summary of the results of initial sampling from on-site reclaimed water, surface water, ground water and periphyton. Preliminary conclusions based on these initial results are provided at the end of this summary data report.

This project was designed with two phases. Phase one sampling was a one-time evaluation of upstream and downstream conditions relative to on-site reclaimed water and local spring discharge. Sampling for phase two will be determined based on the results of phase one and includes repeated follow-up sampling to illuminate spatial and temporal variability and to allow application of robust statistical analysis methods.

Methods

The field investigation was conducted on October 15, 2014. Physiochemical parameters were collected in the field using a multiprobe water quality meter, and spring and stream discharge was measured with a Marsh McBirney Flowmate. Water samples from reclaimed water sources (irrigation lines and ponds), surface water (streams), groundwater (spring discharge) and periphyton (from rock scrapings) were collected by WPD staff and delivered to the Lower Colorado River Authority laboratory for analysis following City of Austin standard operating procedures.

In the first phase of this study 21 sites within one park and three golf courses with recent application of reclaimed water were sampled (Table 1, Figure 1). Sites included four known springs (10765, 661, 662, and 10769), on-site reclaimed water irrigation source ponds or supply lines (10767, 10775, 10779, and 10768), and upstream/downstream sample sites on creeks (3858/10767, 10773/625, 3879/10778, 10770/10772, and 843/10771).

Table 1. Sites sampled during phase 1.

Location	Site number and name	Purpose
Bartholomew Park	3858 Tannehill Creek @ Berkman Dr	upstream of irrigation
	10766 Tannehill downstream of Bartholomew Spring	downstream of irrigation
	10767 Bartholomew Park Irrigation water	source water for irrigation
	10765 Bartholomew Spring	groundwater spring
Hancock Golf Course	10773 Waller Creek @ 45th	upstream of irrigation
	625 Waller Creek @ 38th	downstream of irrigation
	10775 Hancock Irrigation Water	source water for irrigation
Morris Williams Golf Course	843 Tannehill @ Lovell	upstream of irrigation area (mainstem of Tannehill)
	10771 Tannehill @ MLK	downstream of irrigation area (mainstem of Tannehill)
	10770 Morris Williams Central Trib upstream	upstream of irrigation area (tributary of Tannehill)
	10772 Morris Williams Central Trib downstream	downstream of irrigation area (tributary of Tannehill)
	10768 Morris Williams Irrigation Pond	source water for irrigation
	10769 Moose Lodge Spring	groundwater spring
Jimmy Clay/Roy Kizer Golf Course	10776 Williamson downstream Pleasant Valley	upstream of irrigation
	3879 Williamson Creek at Dove Springs Park	upstream of spring
	661 Roy Kizer Spring	groundwater spring
	10778 Williamson downstream Roy Kizer Spring	downstream of spring
	10779 Roy Kizer Reclaim Water Pond	source water for irrigation
	65 Onion Creek at William Cannon	upstream of irrigation area
	253 Onion Creek at McKinney Falls upper pool	downstream of irrigation area
	662 Driving Range Spring	groundwater spring

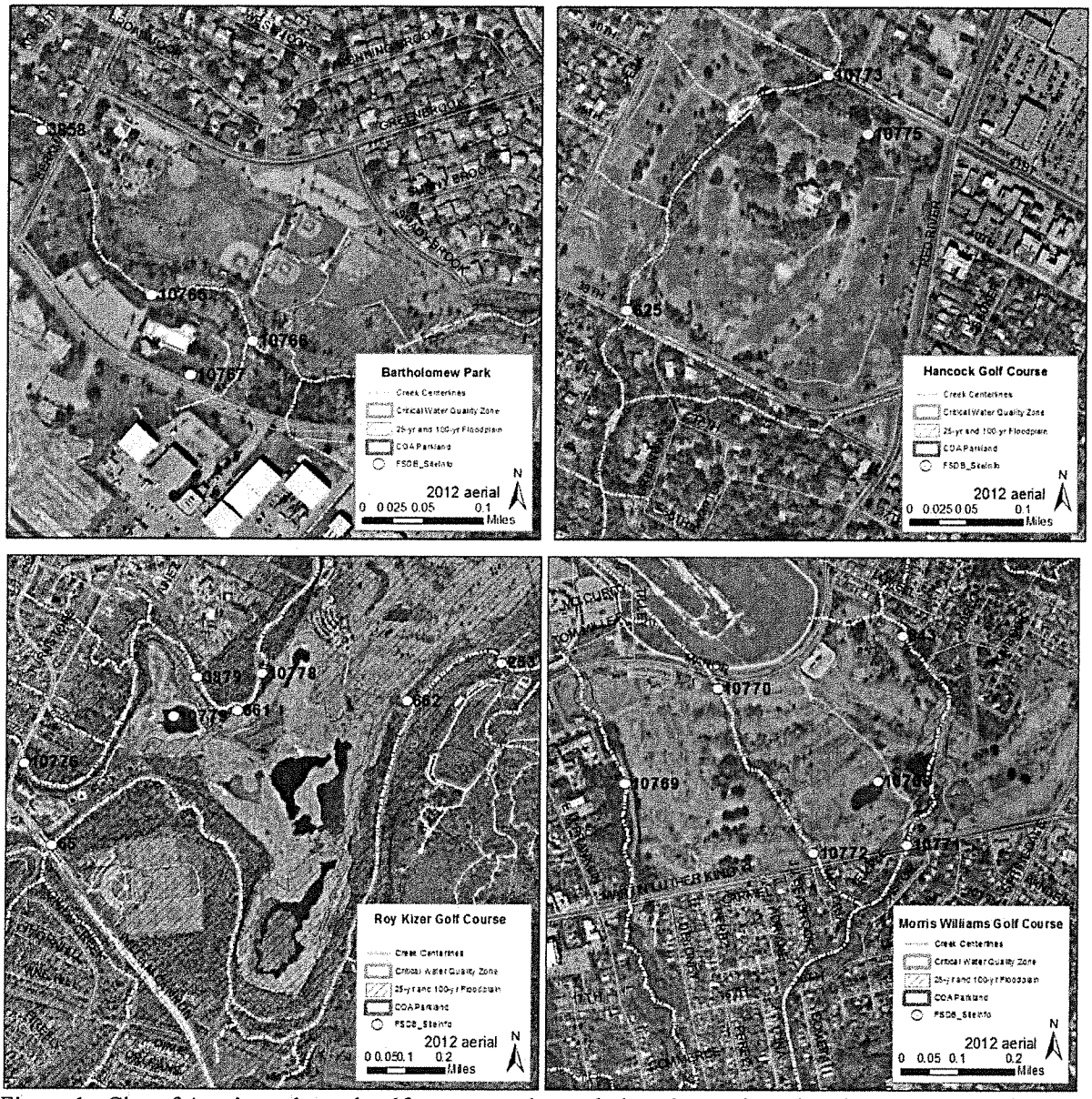


Figure 1. City of Austin parks and golf courses and sample locations selected to determine potential for impacts to surface and spring water.

Data for the following parameters were collected in water samples:

Field Parameters
- Conductivity
- Dissolved Oxygen
- Temperature
- pH
- Discharge (flow)

Ions
- Chloride
- Flouride
- Calcium
- Magnesium
- Sodium
- Potassium
- Sulfate
- Calcium Carbonate (Alkalinity)
- Strontium

Nutrients and Organic Carbon
- Nitrogen, Nitrate & Nitrite (as N)
- Ammonia, Total (as N)
- Total Kjeldahl Nitrogen (as N)
- Phosphorus, Total (as P)
- Orthophosphorus Total (as P)
- Total Organic Carbon (TOC)

Stable Isotopes
- Nitrogen-15/Nitrogen-14 Ratio
- Oxygen-18/Oxygen-16 Ratio

In addition to water samples, periphyton scrapings from rocks (epilithon) were collected from randomly selected rocks within the riffles upstream and downstream of each irrigation site. Pursuant to City of Austin Standard Operating Procedures, rocks were collected from undisturbed areas in the riffle before other sampling had occurred. Rocks chosen were relatively flat to ensure a consistent sample area. An area of 47 cm^2 was scraped from each rock and placed into a shallow collecting pan. Each rock was rinsed with deionized water to flush epilithon from the rock. Material from nine rocks in each riffle was composited in the collection pan and then placed into one darkened sample bottle and one sample bottle with H_2SO_4 for preservation. Samples were analyzed for chlorophyll *a* (opaque bottle), total organic carbon, total phosphorus, ammonia, nitrate plus nitrite, and Total Kjeldahl Nitrogen (acidified bottle).

Results and Discussion

The only site that was dry at the time of the investigation was Williamson at Pleasant Valley (site 10776), which was intended to represent upstream conditions for the segment of Williamson creek at Roy Kizer Golf Course. Williamson Creek surface flow at the time of this investigation originated near the Roy Kizer Golf Course, but an accurate total stream discharge was difficult to measure due to a portion of the discharge flowing through the cobble and gravel alluvial substrate. The next available site with measurable flow to represent upstream conditions was Williamson at Dove Springs (site 3879). Although Williamson at Dove Springs was used to represent upstream conditions for Williamson Creek, it may already have been impacted by migration of reclaimed water effluent from the golf course.

Reclaimed Water Characterization

Reclaimed water holding ponds were sampled at the Morris Williams and Roy Kizer golf courses, and samples were collected directly from reclaimed water irrigation supply lines at Hancock Golf Course and Bartholomew Park (Table 2). Concentrations of nutrients are reduced in the ponds relative to the direct irrigation supply line samples. Ion concentrations in the Roy Kizer storage pond are anomalous with respect to the other samples and long-term Walnut Creek WWTP averages.

Table 2. Results (mg/L) from reclaimed water supplies versus average (2007-2009) Walnut Creek Wastewater Treatment Plant effluent. Total nitrogen is calculated from constituents, and cannot be completely estimated in Walnut Creek WWTP effluent because organic nitrogen data is missing.

Parameter	Bartholo-mew	Hancock	Morris Williams Pond	Roy Kizer Pond	Walnut Creek WWTP Effluent	
					average	stdev
Alkalinity as CaCO3	31.2	38.2	33.4	110	35.33	23.43
Ammonia as N	0.812	0.774	0.043	0.0436	0.28	0.62
Calcium	45.8	45	42.8	35.7	38.23	6.35
Chloride	113	113	119	108	90.83	18.09
Conductivity	1082	1137	1058	827.6	.	.
Dissolved Oxygen	7.83	5.14	16.67	13.49	7.59	0.69
Fluoride	1.75	1.78	1.59	1.32	1.93	0.63
Magnesium	28	26.9	29.3	26.7	17.29	1.43
Nitrate+Nitrite as N	25.5	28.5	14.9	16	20.42	3.76
Orthophosphorus as P	4.51	4.71	0.631	1.08	4.45	1.18
pH	6.83	6.48	9.98	9.75	6.70	0.34
Phosphorus as P	4.62	4.53	1.36	1.44	4.49	1.17
Potassium	15	14.3	15.9	15.7	.	.
Sodium	117	112	122	82.5	76.82	9.19
Strontium	0.265	0.258	0.248	0.179	0.28	.
Sulfate	180	191	181	63.7	90.75	20.42
Total Kjeldahl Nitrogen as N	1.28	0.882	1.68	1.98	.	.
Total Nitrogen as N	26.78	29.38	16.58	17.98	>20.70	.

Discharge

Stream discharge was present at the upstream end of the central tributary on the Morris Williams Golf Course. However, due to the low flow (estimated <0.001 ft^3/s) it was not measured. Flow at all other sites was present during the sample event (Figure 2). Although some stream reaches were gaining flow while others were losing flow, the available baseflow enabled upstream/downstream comparisons. Bank seeps were observed in gaining stream reaches at Morris Williams Golf Course. Direct discharge of reclaimed water was observed to a biofiltration stormwater control and thence to Tannehill Creek at Bartholomew Park. The losing nature of some of these stream reaches may be due to subsurface flow thru alluvial substrate.

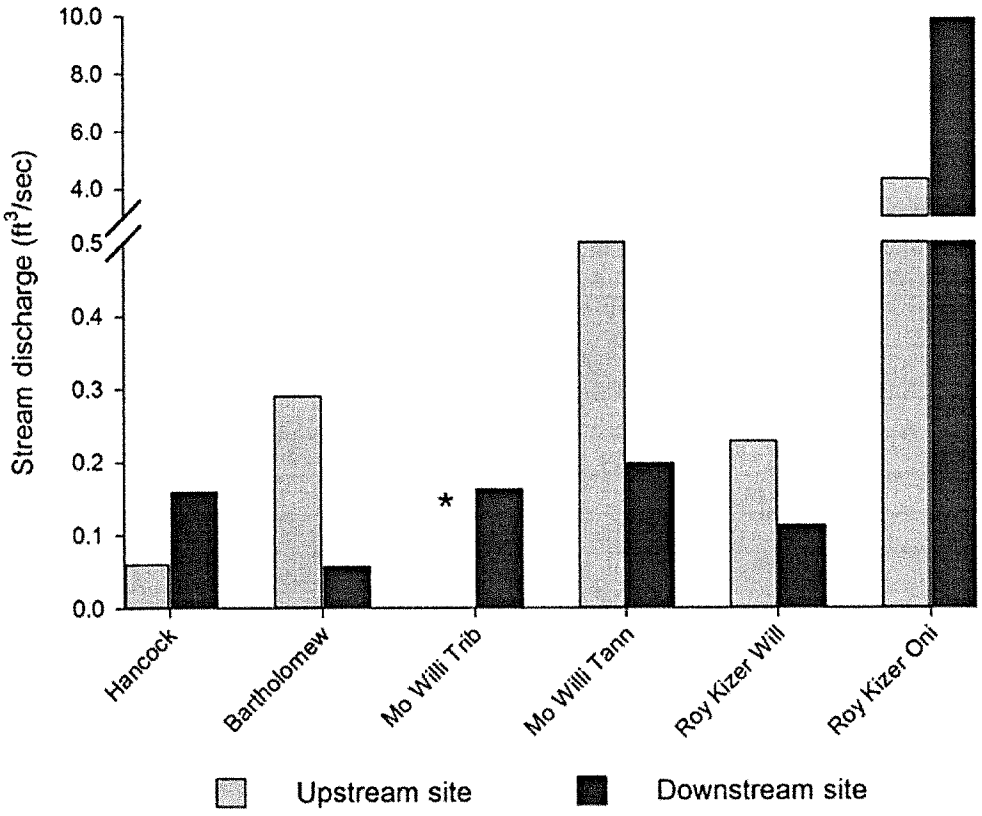


Figure 2. Stream discharge at upstream and downstream sample sites. See maps in Figure 1 for spatial orientation of upstream and downstream study sites. *Upstream site at Morris Williams Central Tributary was flowing, but was <0.001 cfs.

Conductivity

Conductivity was higher at downstream sites compared to upstream sites in 4 of 6 pairs (Figure 3). The difference in conductivity was larger between the upstream/downstream sites of the three creeks with low flow on bedrock stream substrate (i.e. Bartholomew, Morris Williams Tributary, Roy Kizer Williamson). Conductivity differences between upstream/downstream pairs were minor on larger creeks (i.e. Hancock Waller and Roy Kizer Onion) where higher baseflow could dilute the influence of reclaimed water or baseflow was largely subsurface thru alluvial substrates.

Average conductivity of upstream sites was 450 µS/cm (range 279 – 841 µS/cm)while the average conductivity of downstream sites was 565 µS/cm, which is an increase of 25%. Elevation of the specific conductance in the baseflow of a stream would be expected if there were contributions from reclaimed wastewater since reclaimed water samples indicated a much higher average conductivity (1,026 µS/cm).

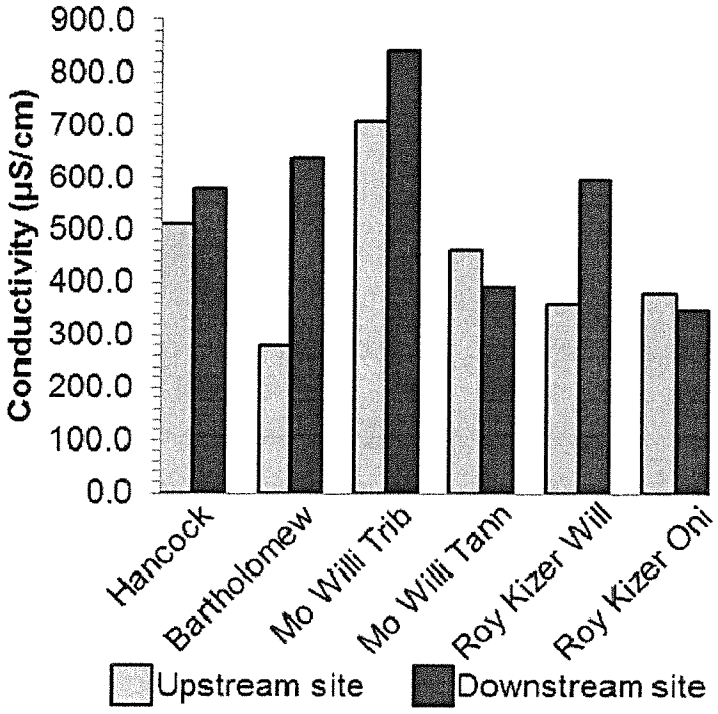


Figure 3. Conductivity values at upstream and downstream sample sites.

Chloride and Fluoride

Chloride and fluoride can be used to detect influence of municipal treated water or wastewater on surface and ground water in Austin.

A comparison of fluoride concentrations from upstream and downstream sites in the study area shows that most (4/6) sites have higher concentration in downstream samples compared to upstream samples (Figure 4A). The average fluoride concentration in reclaimed water was 1.61 mg/L, and Austin Water maintains fluoride concentrations in finished drinking water with a control range of 0.6 to 0.8 mg/L. As would be

expected, differences are less evident in stream segments on the mainstem of large creeks such as Waller and Onion whose higher baseflow and urban influences obscure or dilute potential. Average fluoride concentration for all upstream sites was 0.25 mg/L while the average concentration for all downstream sites was 0.28 mg/L.

More prominent differences were observed in the comparison of chloride results from upstream to downstream relative to fluoride concentrations. Sample results show that most sites (5/6) have a higher concentration in downstream samples (Figure 4B). Average chloride concentration in reclaimed water was 113 mg/L. Average chloride concentration for all upstream sites was 20 mg/L while average concentration for all downstream sites was 42 mg/L.

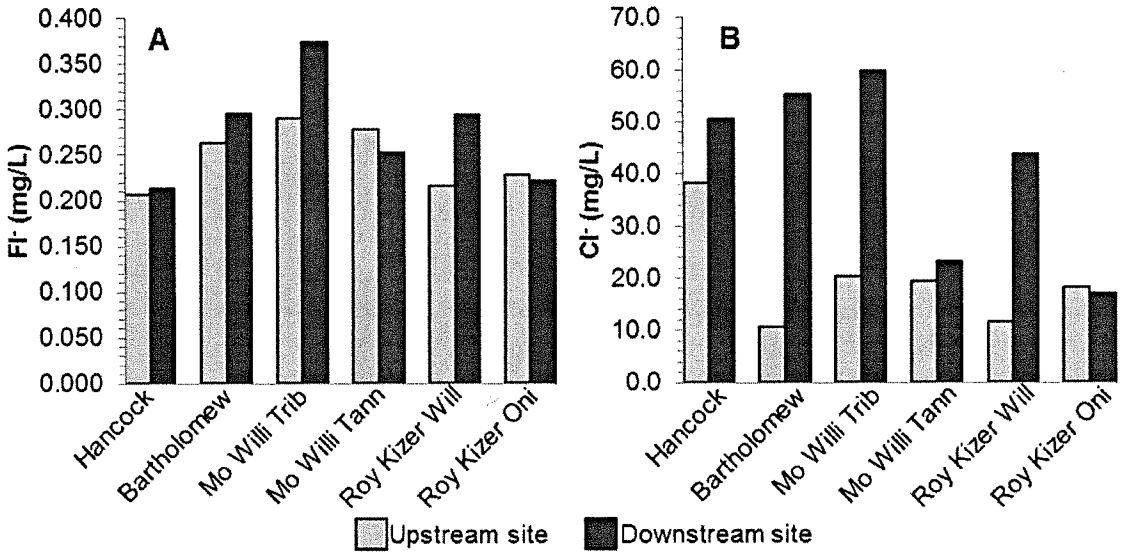


Figure 4. Fluoride (A) and chloride (B) concentrations at upstream and downstream sample sites.

Because chloride and conductivity are generally conservative in surface water, a simple mass balance calculation utilizing the concentrations of upstream, downstream and reclaimed water sites can be made to estimate the maximum potential ratio of reclaimed water exfiltrating from soils into creeks relative to upstream flow (Table 3). This calculation assumes that the difference between upstream and downstream concentrations would only be a result of reclaimed water addition to the adjacent creek. This mass balance analysis suggests the highest potential influence of reclaimed water on adjacent creeks occurs in Bartholomew Park, the Central Tributary to Tannehill in Morris Williams Golf Course, and in Williamson Creek adjacent to Jimmy Clay/Roy Kizer Golf Course.

Table 3. Ratio of the maximum potential reclaimed water exfiltration to streams relative to upstream surface water discharge estimated by simple mass balance. Negative ratios occur when downstream concentrations exceed upstream concentrations.

Parameter	Bartholomew	Hancock	MorrisWilliams (Tannehill mainstem)	MorrisWilliams (Tannehill Central Tributary)	Onion	Williamson
Conductivity	0.81	0.12	-0.10	0.61	-0.07	1.02
Chloride	0.78	0.20	0.04	0.67	-0.01	0.50

Additional Ions

In addition to physiochemical and chloride/fluoride concentrations, a suite of cation and anion parameters were evaluated to determine if surface water impacts are occurring within the study area (Figure 5A-F). As shown in Figure 5, most of the downstream sites were higher in concentration than the upstream sites for all ions. Of the total 36 upstream/downstream comparisons, the downstream site was higher in ion concentration than the upstream site in 28 instances. Although the Hancock sites did not show much difference, some increased downstream concentrations were evident. For all six ions compared at Bartholomew Park, ion concentration of downstream sites increased between 2-4 times that of upstream sites. Of note, the central tributary of Morris Williams Golf Course (Figure 5F, Mo Willi Trib) saw an eight-fold increase in sulfate.

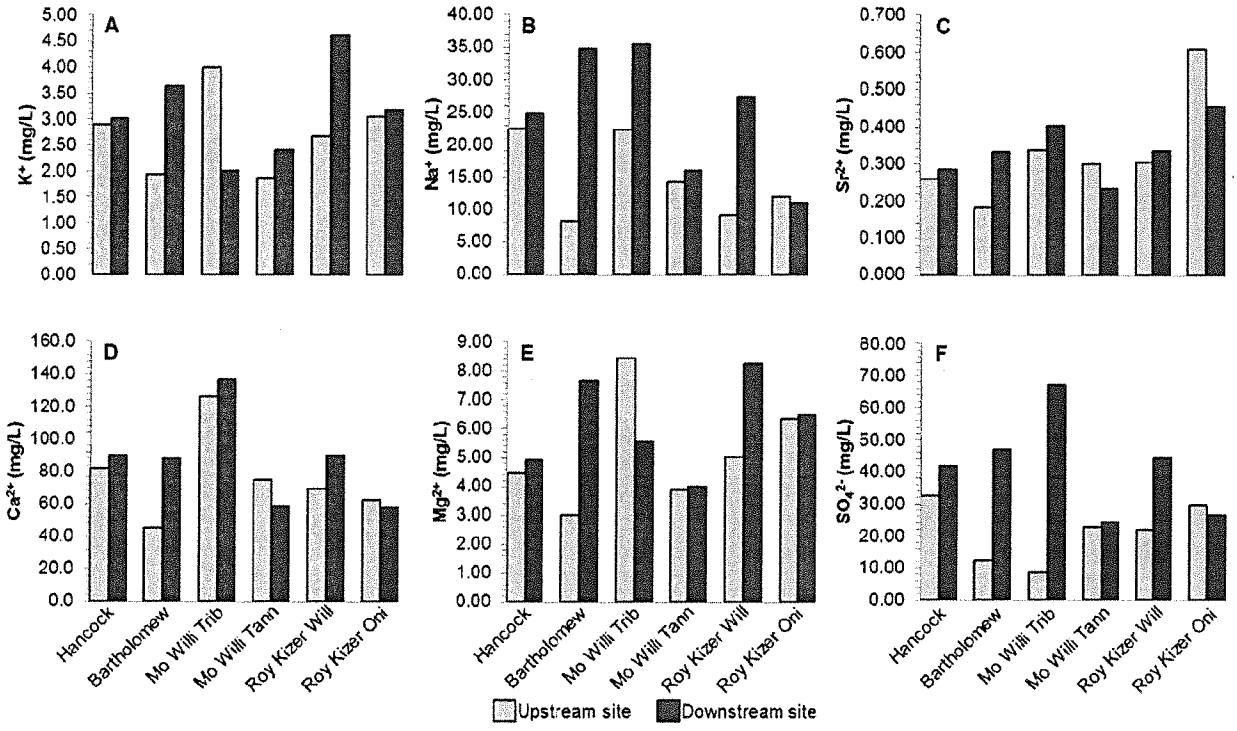


Figure 5. Potassium (A), sodium (B), strontium (C), calcium (D), magnesium (E), and sulfate (F) concentrations at upstream and downstream sample sites.

Analysis of groundwater (spring discharge) indicates similar results to surface water. Characterization of groundwater typically includes examining the cation and anion concentrations to determined hydrochemical facies of the groundwater system. The standard ions used are Na^+, K^+, Ca^{2+}, Mg^{2+}, HCO_3^-, SO_4^{2-}, and Cl^-. The trilinear graph or "piper plot" is the standard method for presenting the cation and anion data. Each apex of a triangle represents 100% of one or two ion constituents, with the cations represented at the lower left triangle and anions at the lower right triangle (Figure 6). The diamond-shape area between the two triangles is used to project a point that represents both the cation and anion concentrations. The advantage of the piper diagram is that a large number of samples with multiple

parameters can be plotted to reveal trends with minimal confusion. The effects of mixing water from two different sources can become apparent. The mixing of two different waters will result in a plot in which unimpacted waters will be separated from pollution sources, and the impacted waters will form an intermediate line in between.

The ion data for the reclaimed water results is shown in the piper plot (Figure 6). Reclaimed water (from irrigation lines and ponds) is clearly distinct in its characterization within the plot on the right hand sides (pink squares) while the upstream, or unimpacted sites (open triangles) are clustered on the left hand side. The downstream sites (grey triangles) migrate in the direction of the reclaimed water characterization. The linear drift in the ion data towards the ion composition measured for reclaimed water indicates the mixing of sodium, chloride and sulfate enriched reclaimed irrigation water with both the background groundwater and surface water.

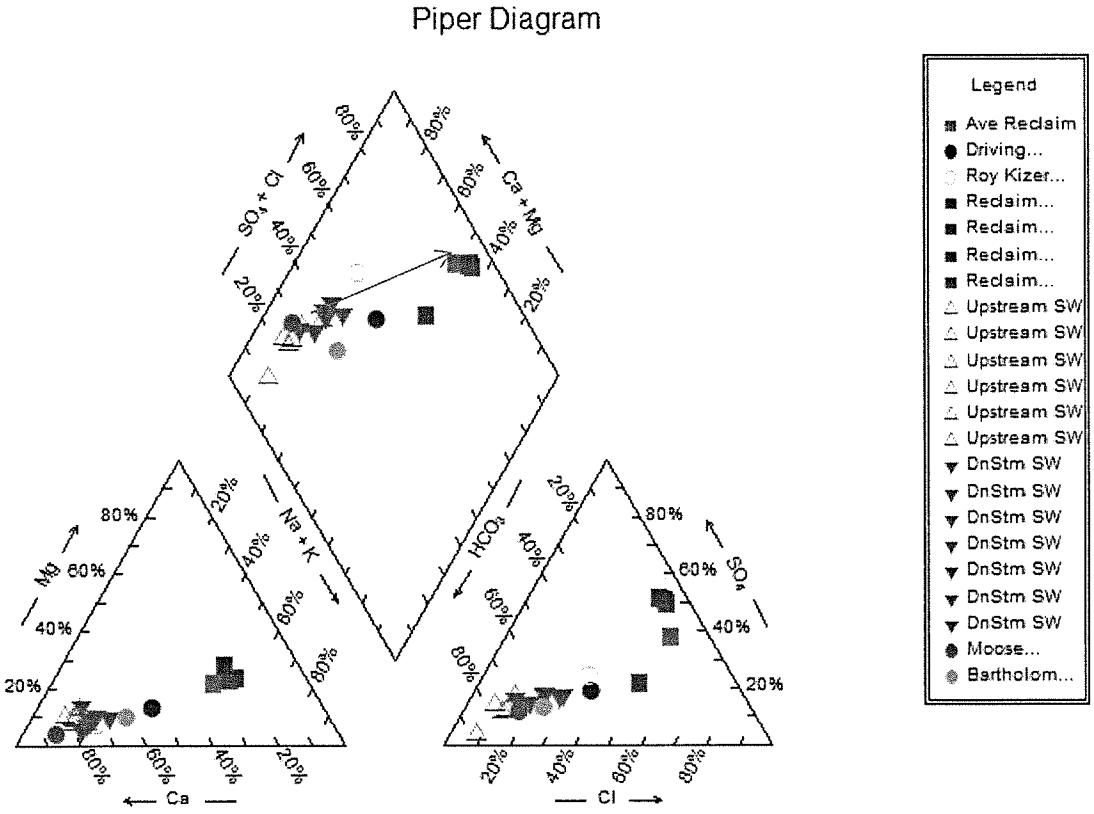


Figure 6: Piper diagram of major cation and anion data.

Nutrients

Excess nutrients in surface water can result in nuisance algal blooms that cause swings in dissolved oxygen concentrations, aquatic life community imbalance, odor problems and fish kills (Wharfe et al. 1984; Biggs 1985; Biggs and Price 1987; Welch et al. 1988; Quinn and Gilliland 1989; Quinn and Hickey 1990). Nutrient concentrations were higher at the majority of the downstream sites compared to the upstream sites (Figure 7A-F), especially as shown by nitrate/nitrite concentrations (Figure 7D). The increase in nutrient concentrations is most evident at Bartholomew Park and at Morris Williams Golf Course. Of note, the nitrate/nitrite concentration at the downstream site was 55 times higher than the

upstream site at both Bartholomew Park and Williamson Creek sites associated with Roy Kizer Golf Course. The average nitrate/nitrite concentration at upstream sites was 0.32 mg/L while the average downstream concentration was 1.15mg/L (total range 0.02 – 2.00 mg/L). Similarly, an increase in phosphorus (both orthophosphorus and total phosphorus) concentration is seen between upstream and downstream at four of the six monitoring sites (Figure 7E). Increases in nutrients at Morris Williams Golf Course and Bartholomew park were particularly noticeable. All of the nutrient parameters (TN, TKN, NH3, NO2+NO3, TP and OP) evaluated on Morris Williams Golf Course Tannehill sites (see Mo Willi Tann below), were between two to twenty-five times higher at the downstream sites than at the upstream sites. All nutrient parameters were higher at the downstream sites of Bartholomew Park as well.

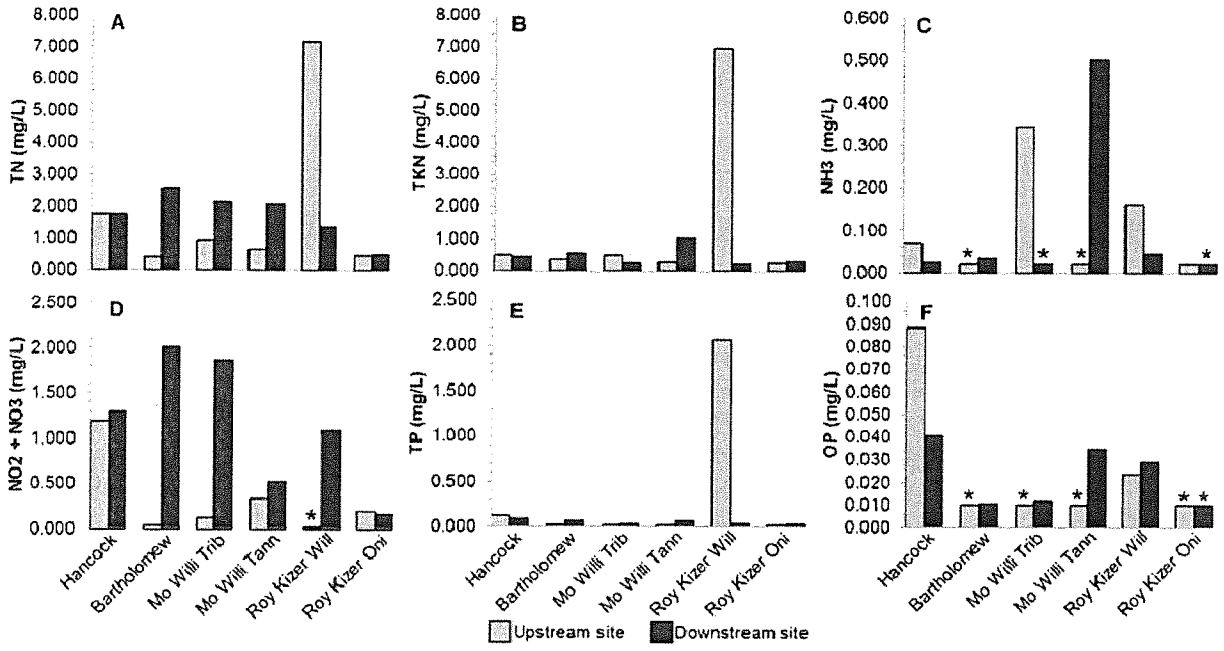


Figure 7. Total nitrogen (A), total kjeldahl nitrogen (B), ammonia (C), nitrate and nitrite (D), total phosphorus (E), and orthophosphate (F) at upstream and downstream sample sites. * indicates sample concentrations were below detection limits.

The total phosphorus concentration at the upstream site on Williamson Creek at the Roy Kizer Golf Course was 2.00 mg/L, two orders of magnitude greater than the background concentrations of about 0.02 mg/L. Although Williamson Creek was dry just upstream of the Roy Kizer Golf Course (site 10776), the creek begins to flow as it winds around the golf course (site 3879). The observed elevated total phosphorus concentration recorded at Williamson Creek above Roy Kizer Kizer Spring may be a result of reclaimed water contribution to the shallow groundwater seepage that creates surface baseflow in this reach.

Benthic Algae

Chlorophyll *a* is commonly used to determine the algal biomass of a system. Carbon:Nitrogen:Phosphorus stoichiometry in algal cells has been shown to respond to increases in nutrient loads. An increased load of nitrogen or phosphorus leads to lower C:N or C:P ratios in periphyton communities (Hillebrand and Kahlert 2001; Hillebrand and Kahlert 2002; Stelzer and Lamberti 2001; Frost and Elser 2002; Bowman et al. 2005). The increased amounts of nitrogen or phosphorus in the algal

cells can lead to an increase in the algal growth rates (Rhee 1973; Droop 1974). This may allow benthic algal biomass to increase more rapidly in nutrient enriched water.

Benthic algae results for the C:P ratios and chlorophyll *a* content of samples collected upstream and downstream of irrigation sites were calculated on a consistent spatial scale (Table 4). Results for the benthic algae samples collected in the tributary to Tannehill Creek downstream of the Morris Williams Golf Course are not shown because a lack of rock substrate in the upstream site did not allow for benthic algae collection and thus there is no data available for comparison.

Table 4: Benthic algae chlorophyll *a* and carbon to phosphorus (C:P) ratios collected upstream and downstream of each reclaim irrigation site.

Site	Benthic Chlorophyll a (mg/m^2)		Benthic C:P Ratio	
	Upstream	Downstream	Upstream	Downstream
Bartholomew	35.40	56.60	11.1	10.4
Morris Williams:Tannehill mainstem	79.40	88.90	15.3	7.8
Hancock: Waller	26.10	65.00	8.0	9.8
Clay/Kizer: Onion	14.10	8.30	17.7	6.1
Clay/Kizer: Williamson	9.20	41.40	26.3	9.8

Benthic chlorophyll *a* (mg/m^2) increased from upstream to downstream at four out of five irrigation sites (Figure 8). Not enough data points exist yet to perform a statistical analysis with strong power to ensure statistical inferences would be accurate; however, the increasing pattern in the benthic chlorophyll *a* suggest an increase in nutrient loading to the creek at the potentially irrigation-influenced downstream sites. In addition, the trophic status as proposed by Dodds et al. (1998) and accepted by the US Environmental Protection Agency (2001) may have shifted from oligotrophic (< 20 mg/m^2 chlorophyll *a*) to mesotrophic (20-70 mg/m^2 chlorophyll *a*) on Williamson Creek upstream to downstream of the Clay/Kizer irrigation area. More sample events are needed at the study reaches before trophic status can be definitively determined.

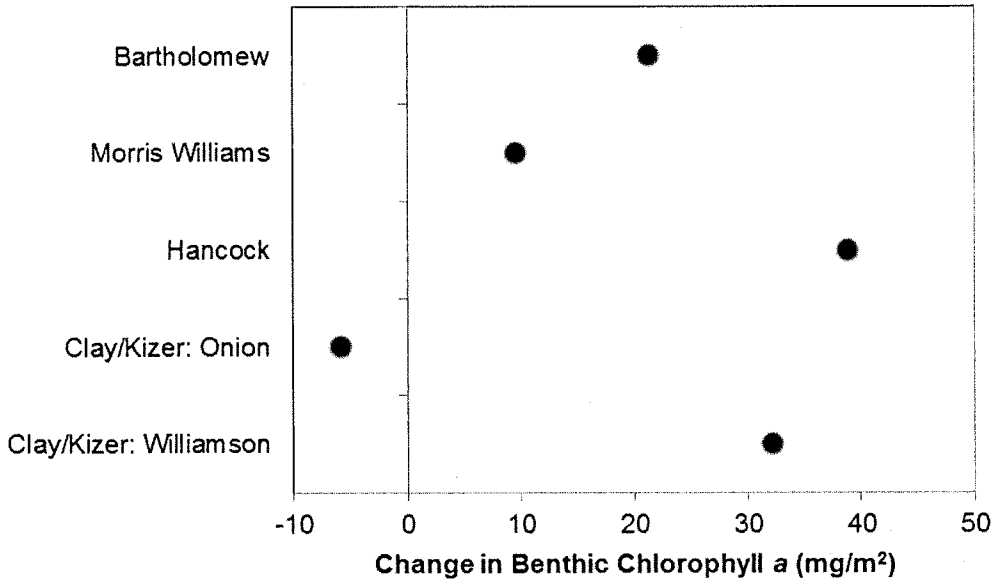


Figure 8: Change in benthic algae chlorophyll *a* (mg/m^2) from upstream to downstream at each site.

Benthic C:P ratios decreased from upstream to downstream at four out of five irrigation sites (Figure 9). Not enough data points exist yet to perform a statistical analysis with strong power to ensure statistical inferences would be accurate; however, the decreasing pattern in the benthic C:P ratios suggest an increase in nutrient load to the creek at the downstream sites.

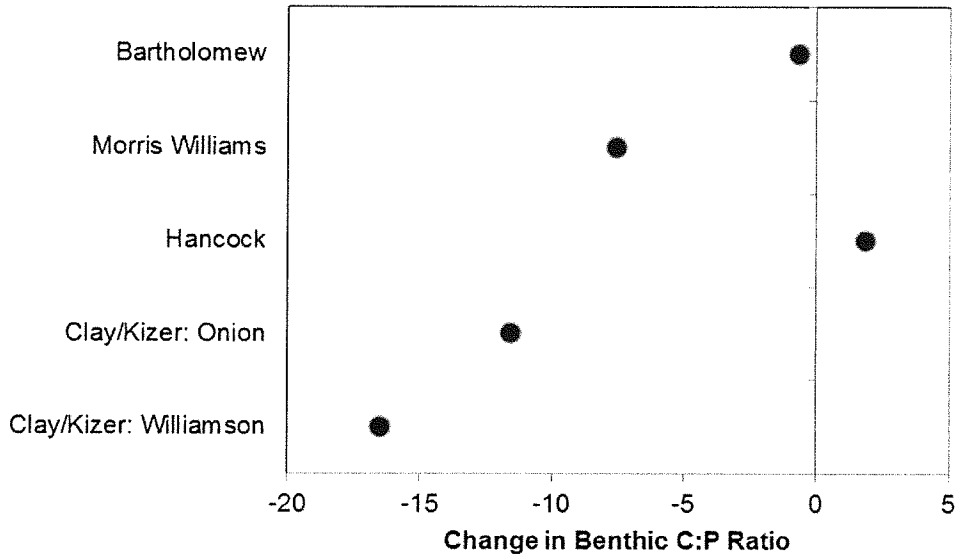


Figure 9: The change in benthic algae carbon to phosphorus (C:P) ratios from upstream to downstream at each reclaim irrigation site.

Nitrogen Isotopes

Lab analysis of the stable nitrogen and oxygen isotope ratios of nitrate collected during the initial October 25, 2014, sampling event revealed that all sites with sufficient nitrate for isotope analysis plotted in the biogenic range, suggesting that the source of nitrogen was manure or wastewater (Figure 10). There was no indication that the nitrogen was originating from precipitation or fertilizer application. Both upstream and downstream sites on Waller plotted in the biogenic range, possibly indicating leaking wastewater infrastructure upstream of the Hancock Golf Course. The inconsistent relationships between the irrigation water sources and the receiving water samples are intriguing, and suggest that differential nitrification and denitrification processes may be occurring.

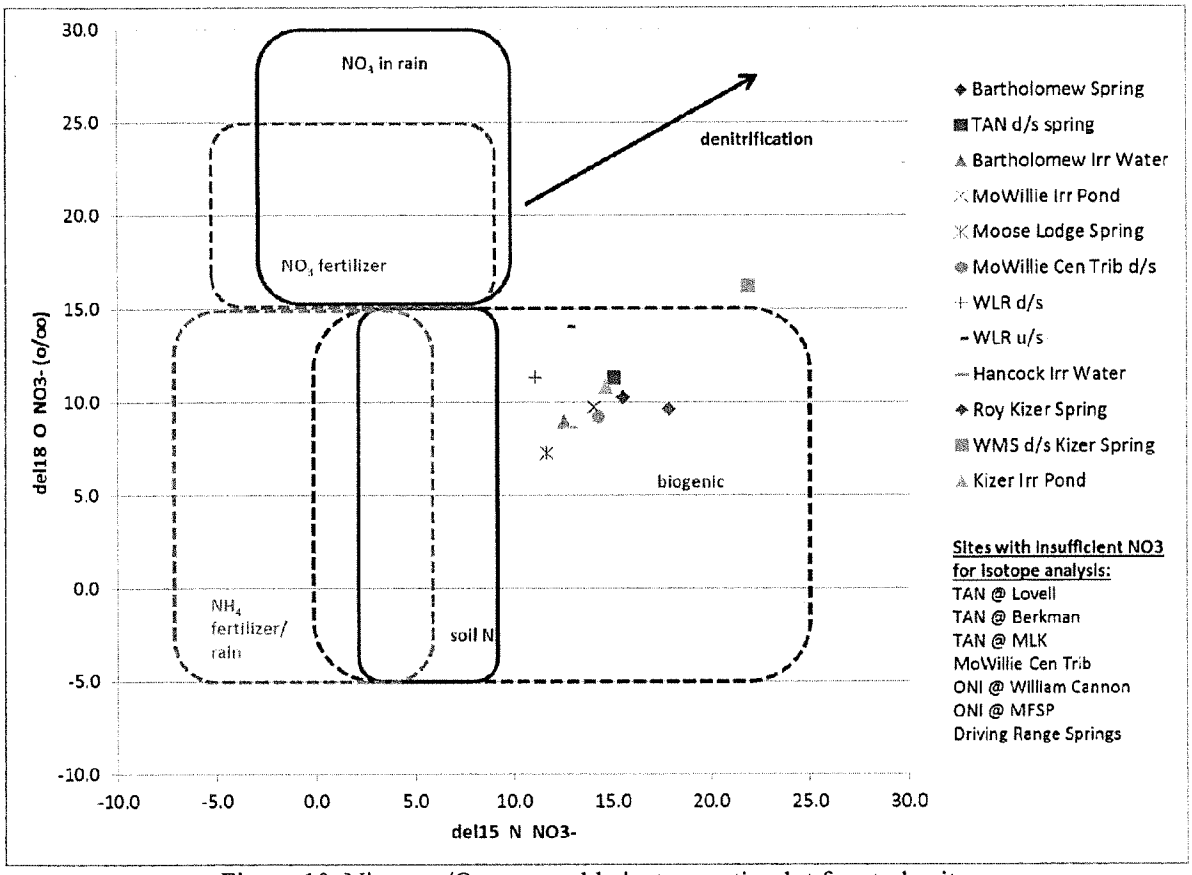


Figure 10. Nitrogen/Oxygen stable isotope ratio plot for study sites.
Source boundaries adapted from Kendall 1998.

Conclusions

As phase one of a two phase study, surface water and groundwater samples were collected on October 15, 2014, at sites upstream and downstream of four locations utilizing City of Austin reclaimed water for irrigation in close proximity to creeks. Samples were analyzed for physiochemical parameters, ions, nutrients, and nitrate isotopes. Benthic algal scrapings were analyzed for area-adjusted algal biomass and nutrient to carbon ratios. Initial analysis of the phase one results indicates:

- Reclaimed water chemical composition changed when the reclaimed water was stored in open holding ponds relative to composition in distribution pipes.
- Conductivity was higher in 4 out of 6 sites downstream of reclaimed water irrigation areas. Average conductivity of upstream surface water sites was 450 µS/cm, and average conductivity of downstream surface water sites was 565 µS/cm.
- Chloride (5/6) and fluoride (4/6) were generally higher in sites downstream of reclaimed water irrigation areas. Average chloride concentrations for upstream surface water sites was 20 mg/L, and average chloride concentrations for downstream surface water sites was 42 mg/L.
- Mass balance of chloride and conductivity, which are conservative in Austin streams, suggests the highest potential influence of reclaimed water on adjacent creeks occurs in Bartholomew Park, the central tributary to Tannehill Branch in Morris Williams Golf Course, and in Williamson Creek adjacent to Jimmy Clay/Roy Kizer Golf Course.
- Ion concentrations generally increase at surface water sites downstream of reclaimed water irrigation.
- Ion composition at springs adjacent to reclaimed water irrigation locations and downstream surface water sites are migrating towards a composition more similar to reclaimed water relative to upstream surface water composition.
- Increased nutrients, especially nitrate plus nitrite, are generally observed in downstream samples. Total nitrogen and total phosphorus were higher in 4 out of 6 sites.
- Nitrogen and oxygen isotopes of nitrate for all sites with sufficient nitrate for analysis indicated that nitrogen was originating from biogenic (manure or wastewater) sources. Nitrogen in Waller Creek upstream of Hancock Golf Course also yielded a biogenic signature.
- Benthic chlorophyll *a* concentrations and C:P ratios suggest an increased loading of nutrients downstream of irrigations sites. Benthic chlorophyll *a* concentrations downstream of the Clay/Kizer Golf Course might be indicative of a change in trophic status of Williamson Creek.

Acknowledgements

This initial sampling event was completed with the assistance of multiple City of Austin Parks and Recreation Department staff, who facilitated access to the park and golf course locations. Additionally, Dan Pedersen with Austin Water provided background information on the use of reclaimed water at these locations, and provided reclaimed water sampling information. Watershed Protection Department expresses thanks to these individuals for assisting with this project.

References

Biggs, BJF. 1985. Algae: a blooming nuisance in rivers. Soil and Water, 21: 27–31.

Biggs, BJF, and GM Price. 1987. A survey of filamentous algal proliferations in New Zealand rivers. New Zealand Journal of Marine Freshwater Research, 21: 175–191.

Biggs, BJF, and HA Thomsen. 1995. Disturbance in stream periphyton by perturbations in shear stress: time to structural failure and differences in community resistance. Journal of Phycology, 31: 233–241.

Bowman, MF, PA Chambers, and DW Schindler. 2005. Changes in stoichiometric constraints on epilithon and benthic macroinvertebrates in response to slight nutrient enrichment of mountain rivers. Freshwater Biology, 50(11): 1836-1852.

Dodds, WK, JR Jones, and EB Welch. 1998. Suggested classification of stream trophic state—Distributions of temperate stream types by chlorophyll, total nitrogen, and phosphorus: Water Research, 32: 1455–1462.

Droop, MR. 1974. The nutrient status of algal cells in continuous culture. Journal of the Marine Biological Association of the United Kingdom, 54(4): 825-855.

Frost, PC, and JJ Elser. 2002. Effects of light and nutrients on the net accumulation and elemental composition of epilithon in boreal lakes. Freshwater Biology, 47: 173–183.

Hillebrand, H, and M Kahlert. 2001. Effect of grazing and nutrient supply on periphyton biomass and nutrient stoichiometry in habitats of different productivity. Limnology and Oceanography, 46: 1881–1898.

Hillebrand, H, and M Kahlert. 2002. Effect of grazing and water column nutrient supply on biomass and nutrient content of sediment microalgae. Aquatic Botany, 72: 143–159.

Kendall, Carol. 1998. Tracing nitrogen sources and cycling in catchments. *IN* Isotope Tracers in Catchment Hydrology. Edited by C. Kendall and J.J. McDonnell. Elsevier Science B.V., Amsterdam.

Peterson, CG, and RJ Stevenson. 1989. Substratum conditioning and diatom colonization in different current regimes. Journal of Phycology, 25: 790–793.

Quinn, JM, and BW Gilliland. 1989. The Manawatu River cleanup—has it worked? Transactions of the Institution of Professional Engineers, New Zealand, 16: 22–26.

Quinn, JM, and CW Hickey. 1990. Magnitude of effects of substrate particle size, recent flooding and catchment development on benthic invertebrate communities in 88 New Zealand rivers. New Zealand Journal of Marine and Freshwater Research, 24: 411–427.

Rhee, G. 1973. A continuous culture study of phosphate uptake, growth rate and polyphosphate in Scenedesmus sp. Journal of Phycology, 9(4): 495-506.

Stelzer, RS, and GA Lamberti. 2001. Effects of N:P ratio and total nutrient concentration on stream periphyton community structure, biomass, and elemental composition. Limnology and Oceanography, 46: 356–367.

Stevenson, RJ. 1983. Effects of current and conditions simulating autogenically changing microhabitats on benthic diatom immigration. Ecology, 64: 1514–1524.

US Environmental Protection Agency (EPA). 2001. Ambient water quality criteria recommendations, information supporting the development of state and tribal nutrient criteria for rivers and streams in nutrient ecoregion IV: US Environmental Protection Agency, Office of Water, USEPA–822–B–01–013, pp 31.

Welch, EB, JM Jacoby, RR Horner, and MR Seeley. 1988. Nuisance biomass levels of periphyton algae in streams. Hydrobiologia, 157: 161–168.

Wharfe, JR, KS Taylor, and HAC Montgomery. 1984. The growth of *Cladophora glomerata* in a river receiving sewage effluent. Water Research, 18: 971–979.

City of Austin
WATERSHED PROTECTION

Reclaimed water irrigation water quality impact assessment

SR-16-06; April 2016

Abel Porras P.E., Aaron Richter E.I.T., Scott Hiers P.G., Andrew Clamann, Mateo Scoggins, Chris Herrington, P.E., William Burdick, and Stuart Sudduth

City of Austin
Watershed Protection Department

Introduction

In an effort to reduce demand on municipal potable water supply, the City of Austin is increasing utilization of reclaimed water. Although the benefits to potable water supply resources are clearly realized, the reclaimed water contains pollutants which may have the potential to degrade adjacent creeks and springs in some situations. For example, reclaimed water has elevated concentrations of nutrients (such as nitrogen and phosphorus) that may be an order of magnitude higher than stormwater runoff from developed urban land and two orders of magnitude higher relative to ambient surface water condition (Figure 1).

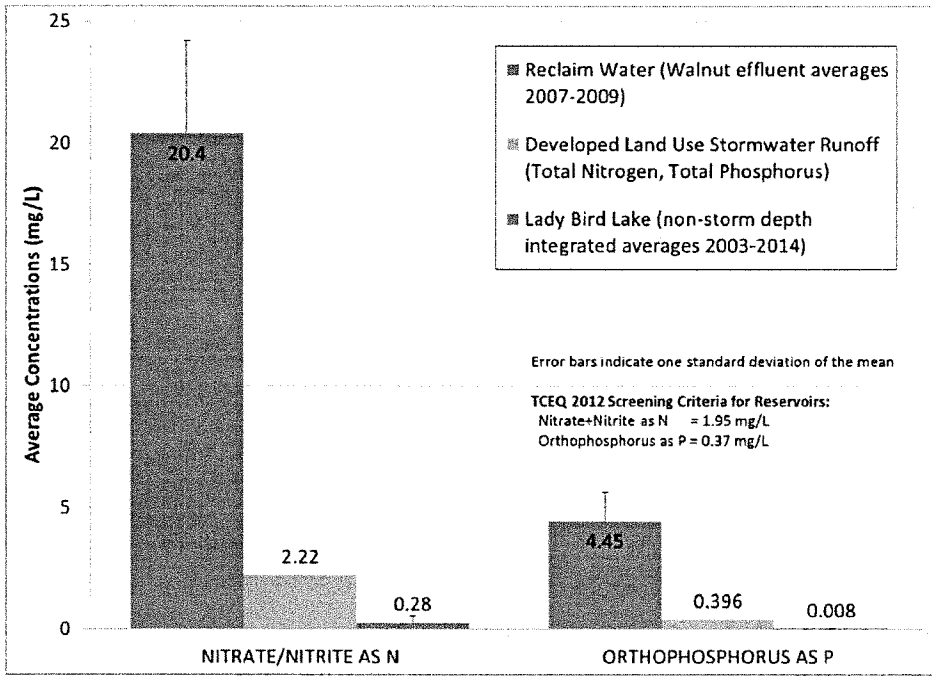


Figure 1: Nutrient concentrations of reclaimed water relative to developed land stormwater runoff and Lady Bird Lake averages (2003-2014). Nutrient concentrations in reclaimed water may be two to three orders of magnitude higher than ambient surface water.

Eutrophication is a well-described process which results when a water body receives an excessive supply of nutrients. In aquatic systems, nutrients such as nitrogen (N) and phosphorus (P) support the growth of algae and aquatic plants. An overabundance of nitrogen and phosphorus can alter the growth habits of algae by increasing to a rate that is faster than the ecosystem can manage. This nutrient enrichment can cause an increase in algal biomass (Figure 2) to the extent that entire reaches of streams show aesthetic degradation (Wharfe et al. 1984, Biggs 1985, Biggs and Price 1987, Welsh et al. 1988), loss of pollution-sensitive invertebrate taxa (Quinn and Hickey 1990), clogging of water intake structures (Biggs 1985), and degradation of dissolved oxygen and pH levels in the water column (Quinn and Gilliland 1989).

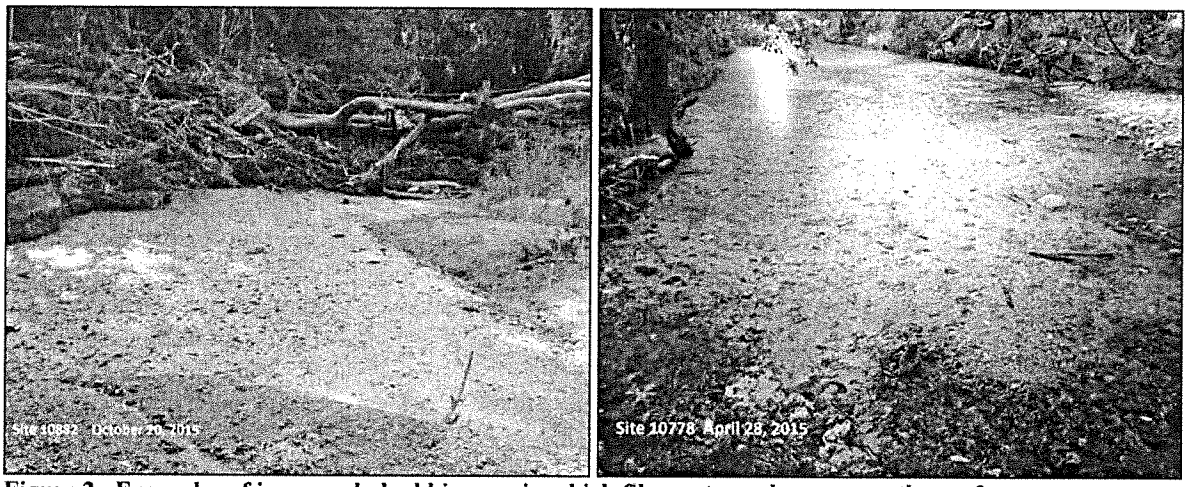


Figure 2. Examples of increased algal biomass in which filamentous algae covers the surface water at two sites within the project area; Site 10882 on Tannehill branch near Morris Williams golf course (left) and Site 10778 on Williamson Creek near Roy Kizer golf course (right).

Eutrophication of surface water resulting from land application of treated wastewater has been previously documented in the Austin area. The land application of treated wastewater was identified as a probable source of elevated nitrogen and phosphorus and cause of periphytic algal blooms in upper Bear Creek (Turner 2010). In addition, a strong biogenic nitrogen isotope signature is observed in a spring down-gradient from a golf course utilizing wastewater effluent for irrigation (COA unpublished data) and analysis of stormwater runoff data indicated higher concentrations of nutrients in runoff from golf courses irrigated with wastewater effluent versus golf courses without effluent irrigation (King et al. 2007, COA 2005). U.S. Geological Survey investigations in Florida have previously identified increases in chloride and nitrate in groundwater wells beneath municipal wastewater effluent sprayfields (Pruitt et al. 1988), and land application of treated municipal wastewater effluent was identified as a major source of nitrate to the regional discharge point of the Upper Floridan Aquifer (Katz et al. 2009).

Instream algal biomass can be difficult quantify, and chlorophyll *a* is commonly used as a surrogate to determine the algal biomass of a system. The Texas Commission on Environmental Quality (TCEQ) (2006) showed that benthic (attached) algal chlorophyll *a* could be a better indicator of nutrient enrichment than water-column chlorophyll *a* in small, fast flowing Texas streams. The organic growth of algae, cyanobacteria and heterotrophic microbes attached to the benthic surface is periphyton. The periphyton that colonize the surfaces of submerged rocks and other stable substrate can easily be scraped from the surface with standard methods in order to collect reproducible and standardized samples from streams.

In addition to the chlorophyll *a* concentrations of the periphyton, the carbon to nitrogen to phosphorus (C:N:P) stoichiometry in algal cells has been shown to respond to increases in nutrient loads. An increased load of nitrogen or phosphorus leads to lower carbon to nitrogen or carbon to phosphorus ratios

in stream and lake periphyton communities (Hillebrand and Kahlert 2001, Hillebrand and Kahlert 2002, Stelzer and Lamberti 2001, Frost and Elser 2002, Bowman et al. 2005). The increased amounts of nitrogen or phosphorus in the algal cells can lead to an increase in the algal growth rates (Rhee 1973, Droop 1974). This may allow benthic algal biomass to increase more rapidly in nutrient enriched water or contribute to nutrient spiraling downstream by increasing nutrients available to downstream reaches.

In the context of potential stream nutrient enrichment, the concerns related to the application of reclaimed water in close proximity of creeks include:

- migration of the reclaimed water to the creeks and shallow groundwater through infiltration and lateral groundwater flow;
- direct irrigation into creeks during improper spray application; and/or
- excessive constituent loading into riparian soils that exceed natural assimilative capacities and consequent transportation to creeks during runoff events.

To enable evaluation of the potential impacts to surface and groundwater quality, City of Austin Watershed Protection Department staff collected water samples from creeks and springs adjacent to locations with reclaimed water irrigation occurring within the Critical Water Quality Zone (CWQZ) and/or floodplain as defined by the City of Austin Land Development Code. This project was conducted in two phases.

Phase 1 sampling was a one-time sample effort of upstream and downstream conditions relative to on-site reclaimed water and local spring discharge in October of 2014. The results of Phase 1 sampling (Clamann et al. 2015) illuminated spatial and temporal variability and allowed application of robust statistical analysis methods which enabled the determination of the sampling locations and frequencies for Phase 2.

Phase 2 sampling included four sample events during the summer of 2015. The following is a summary of the combined results of the Phase 1 and Phase 2 sampling from on-site reclaimed water, surface water, groundwater and periphyton. The results of the Phase 2 sampling supported many of the preliminary Phase 1 conclusions.

Methods

Field Methods

The field investigation for Phase 1 was conducted on October 15, 2014. Phase 2 field investigations were conducted on July 23, August 27, September 24, and October 20 of 2015. Physiochemical parameters were collected in the field using a Hydrolab multiprobe water quality sonde. Spring and stream discharge was measured with a Marsh-McBirney Flowmate. Water samples from reclaimed water sources (irrigation lines and ponds), surface water (creeks), groundwater (spring discharge) and periphyton (from rock scrapings) were collected by WPD staff, preserved in ice, and delivered to the Lower Colorado River Authority laboratory for analysis following City of Austin standard operating procedures (WRE SOP 2013).

Phase 1 of this study included 21 sites which were located within one park and three golf courses that receive application of reclaimed water (Table 1 and Figure 3). Sites included four known springs (10765, 661, 662, and 10769), on-site reclaimed water irrigation source ponds or supply lines (10767, 10775, 10779, and 10768), and upstream/downstream sample sites on creeks (3858/10767, 10773/625, 3879/10778, 10770/10772, and 843/10771). The Phase 2 of this study included 15 sites within one park

and two golf courses (Table 1 and Figure 3). In addition to the samples collected at the sites listed in Table 1, each event included one field replicate sample to document potential for variance within a site.

Table 1: Site list and sample schedule

Location	Site number and name	Purpose	Phase 1	Phase 2			
			Oct 2014	Jul 2015	Aug 2015	Sep 2015	Oct 2015
Bartholomew Park	3858 Tannehill Creek @ Berkman Dr	upstream of irrigation	✓	x	✓	✓	no flow
	10766 Tannehill downstream Bartholomew Spring	downstream of irrigation	✓	x	✓	✓	✓
	10767 Bartholomew Park Irrigation water	source water for irrigation	✓	x	✓	✓	✓
	10765 Bartholomew Spring	groundwater spring	✓				
Hancock Golf Course	10773 Waller Creek @ 45th	upstream of irrigation	✓				
	625 Waller Creek @ 38th	downstream of irrigation	✓				
	10775 Hancock Irrigation Water	source water for irrigation	✓				
Morris Williams Golf Course	843 Tannehill @ Lovell	upstream of irrigation	✓	✓	✓	✓	✓
	10771 Tannehill @ MLK	downstream of irrigation	✓	✓	✓	✓	✓
	10770 Morris Williams Central Trib upstream	upstream of irrigation	✓	✓	✓	✓	✓
	10772 Morris Williams Central Trib downstream	downstream of irrigation	✓	✓	✓	✓	✓
	10768 Morris Williams Irrigation Pond	source water for irrigation	✓	✓	✓	✓	✓
	10769 Moose Lodge Spring	groundwater spring	✓				
	10882 Tannehill 340ft downstream of Lovell	Downstream of seep			✓	✓	✓
Roy Kizer Golf Course	10776 Williamson downstream Pleasant Valley	upstream of irrigation	Dry	✓	Dry	Dry	Dry
	3879 Williamson Creek at Dove Springs Park	upstream of spring	✓	✓	✓	✓	Dry
	661 Roy Kizer Spring	groundwater spring	✓	✓	✓	✓	✓
	10778 Williamson downstream Roy Kizer Spring	downstream of spring	✓	✓	✓	✓	Dry
	10779 Roy Kizer Reclaim Water Pond	source water for irrigation	✓	✓	✓	✓	✓
	10883 Roy Kizer Reclaimed Water Pipe	source water for irrigation		✓	✓	✓	✓
	65 Onion Creek at William Cannon	upstream of irrigation	✓				
	253 Onion Creek at McKinney Falls upper pool	downstream of irrigation	✓				
	662 Driving Range Spring	groundwater spring	✓				

shaded = sample collected, unshaded = sample not collected
"Dry" = site did not have baseflow,
"no flow" = site was sampled for periphyton, but not water chemistry due to lack of baseflow
"x" = site not sampled because facility damage; no irrigation for previous month due to repairs.
blank = site was not part of the QAPP at the time of sampling

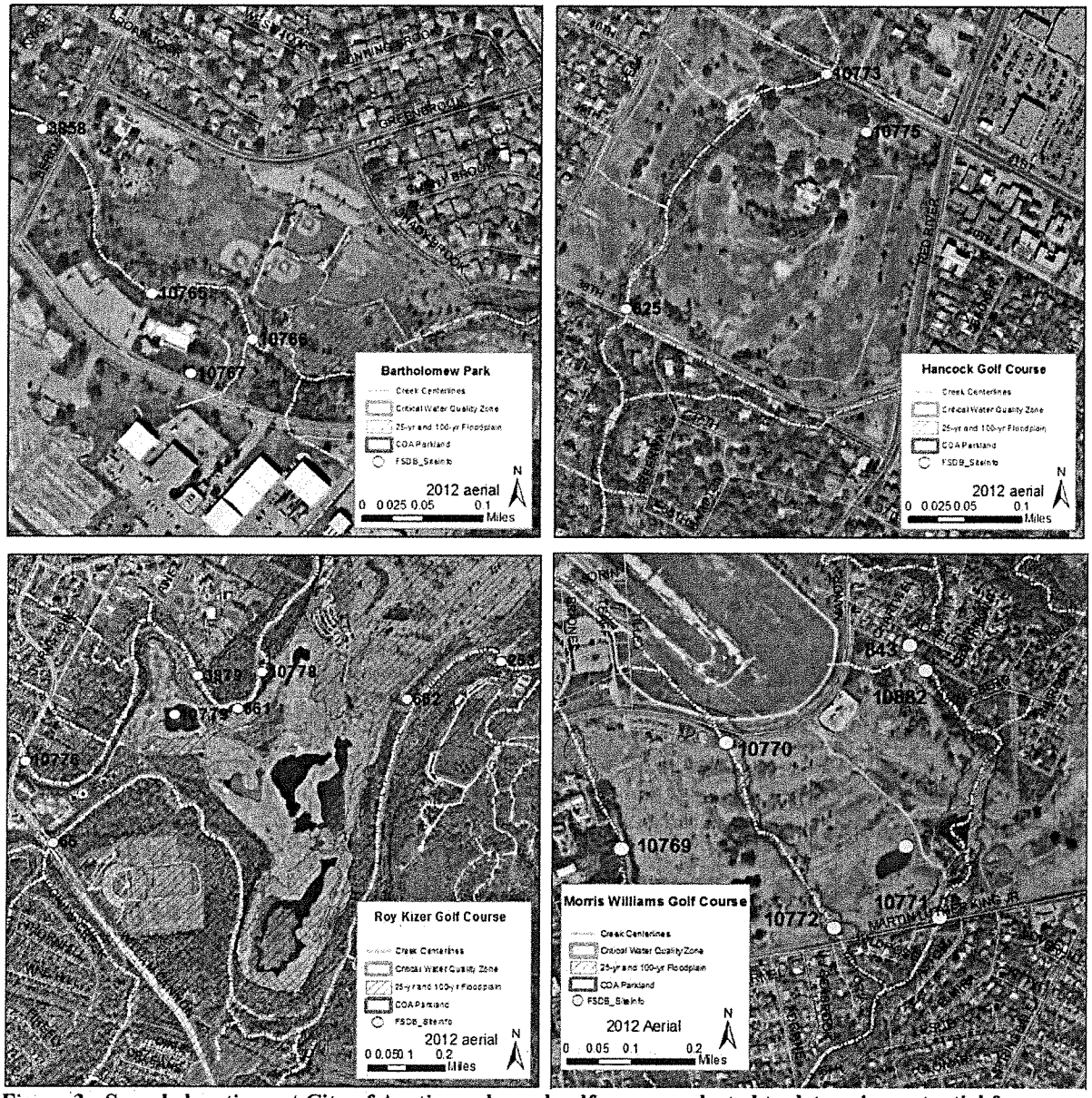


Figure 3: Sample locations at City of Austin parks and golf courses selected to determine potential for impacts to surface and spring water for the Phase 1 and Phase 2 sample events.

Not all sites from Phase 1 were sampled during the Phase 2 field efforts. Sites that were dropped following the Phase 1 sample events include:

- Hancock golf course sites were dropped from the Phase 2 study because the Phase 1 results indicated that the surface water upstream (Waller Creek) of the site was already too highly impacted by pollutant load to provide adequate resolution of contributing impacts within the site.
- Sites on Onion Creek were dropped from Phase 2 due to the large contributing drainage area and resulting high discharge of Onion Creek confounding interpretation of potential impacts.

As shown in Table 1, not all scheduled sites were sampled during all sampling events due to circumstances beyond control, including:

- Bartholomew Park was not sampled in July 2016 because application of reclaimed water was temporarily halted prior to and during the July event due to damages to the irrigation system. Sampling at Bartholomew Park resumed immediately following the repair and subsequent resumption of irrigation system operation.
- Williamson at Pleasant Valley (site 10776) was originally intended to represent upstream conditions for the segment of Williamson Creek at Clay/Kizer golf course. However, it was predominately dry during the sample period. This site was replaced by Williamson at Dove Springs (site 3879) because the stream began producing baseflow near this section of Roy Kizer Golf Course. Accurate total stream discharge was difficult to measure at this location due to a portion of the discharge flowing through the cobble/gravel alluvial substrate. Although Williamson at Dove Springs was used to represent upstream conditions for Williamson Creek, based on its location relative to the golf course it may have already been impacted (and/or creek discharge produced) by the migration of golf course irrigation water.

Water samples were evaluated for conventional field parameters, nutrients, metals, ions and isotopes (Table 2). In addition to these parameters, the periphyton from rocks (epilithon) was collected from rocks randomly selected from within the riffles upstream and downstream of irrigation areas within Bartholomew Park, Roy Kizer, and the mainstem of Tannehill Creek at Morris Williams. As per City of Austin Standard Operating Procedures, rocks were collected from undisturbed areas in the riffle downstream of the water sample and before other sampling had occurred. Relatively flat rocks were selected to ensure a consistent sample area. An area of 19.6 cm^2 was scraped from each rock and placed into a shallow collecting pan (WRE SOP 2013). Each rock was rinsed with deionized water to flush epilithon from the rock. Material from nine rocks in each riffle was composited in the collection pan and then placed into one darkened sample bottle and one regular sample bottle with H_2SO_4 for preservation. Samples were analyzed for Chorophyll *a*, pheophytin, total organic carbon, total phosphorus, ammonia, nitrate+nitrite, and total Kjeldahl nitrogen. Total nitrogen was calculated by taking the sum of nitrate+nitrite and total Kjeldahl nitrogen. Chlorophyll *a*, total organic carbon, total phosphorus, and total nitrogen were then converted to mg/m^2 from mg/L.

Rainfall (inches) for the Williamson and Tannehill watersheds was downloaded from RainVieux and plotted with the monthly volume of reclaimed water irrigated at each site for the project's duration (October 2014 to December 2015). Total nitrogen in the water column, benthic carbon to phosphorus ratios (C:P), benthic carbon to nitrogen ratios (C:N), and benthic chlorophyll *a* were plotted for each sampling event in order to visualize the difference between upstream and downstream concentrations over time.

Table 2: Parameter List

Location	Site number and name	Water Type	Phase 1 Parameters	Phase 2 Parameters
Bartholomew Park	3858 Tannehill Creek @ Berkman Dr	creek	L, F, RS, I	L, F, RS
	10766 Tannehill downstream Bartholomew Spring	creek	L, F, RS, I	L, F, RS
	10767 Bartholomew Park Irrigation water	irrigation	L, F, I	L, F
	10765 Bartholomew Spring	spring	L, F, I	L, F
Hancock Golf Course	10773 Waller Creek @ 45th	creek	L, F, RS, I	
	625 Waller Creek @ 38th	creek	L, F, RS, I	
	10775 Hancock Irrigation Water	irrigation	L, F, I	L, F
Morris Williams Golf Course	843 Tannehill @ Lovell	creek	L, F, RS, I	L, F, RS
	10771 Tannehill @ MLK	creek	L, F, RS, I	L, F, RS
	10770 Morris Williams Central Trib upstream	creek	L, F, I	L, F
	10772 Morris Williams Central Trib downstream	creek	L, F, I	L, F
	10768 Morris Williams Irrigation Pond	irrigation	L, F, I	L, F
	10769 Moose Lodge Spring	spring	L, F, I	L, F
	10882 Tannehill 340ft downstream of Lovell	creek		L, F
Roy Kizer Golf Course	10776 Williamson downstream Pleasant Valley	creek	L, F, RS, I	L, F, RS
	3879 Williamson Creek at Dove Springs Park	creek	L, F, RS, I	L, F, RS
	661 Roy Kizer Spring	spring	L, F, I	L, F
	10778 Williamson downstream Roy Kizer Spring	creek	L, F, RS, I	L, F, RS
	10779 Roy Kizer Reclaim Water Pond	irrigation	L, F, I	L, F
	10883 Roy Kizer Reclaimed Water Pipe	irrigation		L, F
	65 Onion Creek at William Cannon	creek	L, F, RS, I	
	253 Onion Creek at McKinney Falls upper pool	creek	L, F, RS, I	
	662 Driving Range Spring	spring	L, F, I	

**Parameters: L = Lab F=Field RS=Rock Scrapings I=isotopes

Parameters collected during the sampling events included "Field", "Lab", "Rock Scraping" and "Isotopes" as described below. Due to the expense, only Phase 1 samples include isotopic evaluation. Springs, reclaimed water source, and sites without appropriate substrate did not include rock scrapings.

FIELD
Conductivity
Dissolved Oxygen
Temperature
pH
Stream Discharge (flow)

ROCK SCRAPINGS
Nitrate+nitrite as N
Ammonia as N
Total Kjeldahl Nitrogen as N
Phosphorus as P
Total Organic Carbon (TOC)
Chlorophyll *a*
Pheophytin

LAB
Metals (Ca, Mg, Na, K, Sr)
Ions (Cl, F, SO_4)
Alkalinity (Calcium Carbonate)
Nitrate+nitrite as N
Ammonia as N
Total Kjeldahl Nitrogen as N
Phosphorus as P
Orthophosphorus as P
Total Organic Carbon (TOC)

ISOTOPES
Nitrogen-15/Nitrogen-14 Ratio
Oxygen-18/Oxygen-16 Ratio

Analysis Methods

Two general methods were used to determine whether reclaimed water has an impact on adjacent water resources: inferential statistical analysis and theory. Inferential statistical analysis looks solely at the data and tests whether any structure in the data is from a disturbance or is merely due to random chance. Theory comes from the application of first principles and describes the mechanism by which the disturbance manifests itself. Thus, theory can not only predict whether an impact can be detected, but can also be used to estimate the magnitude of its impact. Additionally, any data collected can be used to validate the theory. In combination, these two methods can demonstrate a preponderance of evidence with inferential statistics providing a potential relationship among the data and the theory pointing to the likely causation of that relationship.

Inferential Statistical Analysis

To test whether there was an impact to the receiving water from reclaimed water irrigation; paired differences were calculated for each stream segment receiving reclaimed water. That is, for each site visit, concentration results from the downstream samples were subtracted from concentration results from the upstream samples. The average and standard deviation for these paired differences were calculated and then used to compute confidence intervals. This technique is used to improve the precision of the data by eliminating an additional source of variation (i.e. the variation that comes from taking samples at different times of the year).

Given paired differenced confidence intervals at each stream segment, one may compute the probability that the mean paired difference at each stream segment is equal to zero (i.e. not impacted). Thus, paired differences were calculated for each stream segment and for each analyte and ratio of nutrient concentrations (Gelman and Hill 2007).

Theory

A conceptual model can be used to express how a potential mechanism (e.g. irrigating reclaimed water) might impact an adjacent receiving stream. A plausible conceptual model might invoke mixing upstream water with a distributed loading of this irrigated water along the length of the creek to yield the downstream water composition. This model is graphically represented in Figure 4.

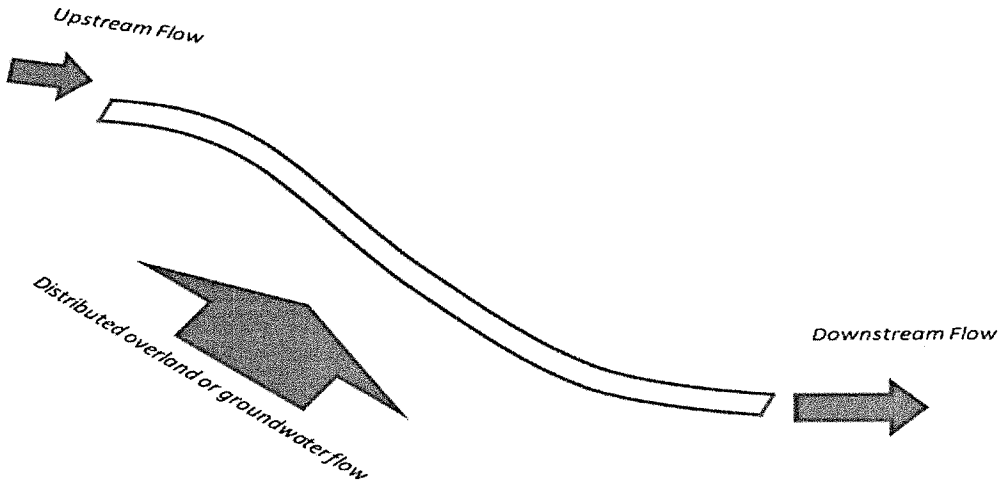


Figure 4: Schematic of reclaimed water irrigation conceptual model.

Applying Conservation of Mass, the mass entering a system must equal the mass exiting the system, assuming no storage within a stream segment. Thus, this model can be represented by:

Upstream mass flow rate + Distributed mass flow rate = Downstream mass flow rate (1)

or:

$$Q_{up} \cdot C_{up} + Q_{ReWW} \cdot C_{ReWW} = (Q_{up} + Q_{ReWW}) \cdot C_{down} \quad (2)$$

where Q_{up} = upstream flowrate (ft^3/s);
Q_{ReWW} = reclaimed water flowrate (ft^3/s);
C_{up} = upstream concentration (mg/L);
C_{ReWW} = reclaimed water concentration (mg/L); and
C_{down} = downstream concentration (mg/L).

Rearranging to solve for C_{down}:

$$C_{down} = F \cdot C_{up} + (1 - F) \cdot C_{ReWW} \quad (3)$$

where

$$F = \frac{Q_{up}}{(Q_{up} + Q_{ReWW})} \quad \text{and} \quad 1 - F = \frac{Q_{ReWW}}{(Q_{up} + Q_{ReWW})}$$

From this, one can see that the downstream concentration is a flow-weighted mixture of upstream and reclaimed water concentrations. If there is no impact, then C_{down} would equal C_{up}, and F would equal unity. Unfortunately, determining F from field measurements of flow may prove difficult over the course of a season due to fluctuations in the flow. Furthermore, estimating the amount of Q_{ReWW} that contributes to the stream requires considerable assumptions on irrigation application rate. Additionally, there may be other influences on the stream, such as groundwater. For example, if there was an additional source to the stream (such as from groundwater) the conceptual model would not change too drastically. There would be an F_1 for the upstream contribution, an F_2 for the groundwater contribution, and a $(1-F_1-F_2)$ for the reclaimed water. However, Equation 3 represents a simple and first iteration of a model, and it will be shown that this simplistic model may be a fair representation of the creek systems in the parks and golf courses.

To arrive at a practical (and long term) estimate of the impact from reclaimed water, it helps to look at the concentrations of the sampled downstream water relative to the upstream and reclaimed water concentrations. Equation 3 establishes that the downstream concentration is, in effect, a mixture experiment. That is, it is postulated that the downstream concentration is a mixture of upstream and reclaimed water concentration. Thus, data collected on the downstream concentration can be used to quantify the extent of this mixture. However, a suite of analytes, rather than a single constituent, is sampled in the surface water. Determining how this suite interacts with each other and their environment is difficult. To overcome this complexity, the geochemical computer program, pHREEQc (pH-REdox-EQulibrium) was used to simulate the chemical mixing of the upstream waters with reclaimed water under equilibrium conditions. The interaction of reclaimed water with the soil (itself a mixture of calcite and montmorillonite) was also simulated in an attempt to more accurately mimic the physical processes of the reclaimed water.

Using this approach, the model predicted downstream concentrations for each of the nine surface water analytes, given the upstream and reclaimed water data at each park. The goal was to determine which fraction, F, corresponded to the downstream surface water concentrations for all nine surface water analytes. Then, that fraction was compared to actual flow measurements, Q_{up} and $Q_{up}+Q_{ReWW}$, to validate the model. An additional validation using Piper plots is used to show the influence of downstream samples to either upstream samples or reclaimed water samples. The pHREEQc model, however, does

not quantify the amount of nutrient (or chemical ion) uptake of algal biomass in the creek. However, the amount of chlorophyll *a* and any nutrient ratios can serve as an indication to the presence of this uptake and to the implication of an impact on the stream.

The conceptual model provides a framework with which to examine all of the data. One can postulate four different hypotheses using this overlying framework that can be tested using the data:

- Hypothesis 1 is that there is no impact on the stream. That is, the reclaimed water has been effectively absorbed into the soil without migrating to the stream. Under this scenario, inferences from the paired difference analyses of the surface water concentrations and the benthic ratios show no impact, and F is equal to, or approximately 1 (i.e. $F \simeq 1$).
- Hypothesis 2 is that there is an impact and can be seen in one of two potential data sets, the surface water data or the benthic ratio data. Thus, Hypothesis 2 is actually made up of two sub-hypotheses.
  - Hypothesis 2a is that there is an impact, but it is only on the surface water. Therefore, the nutrients have yet to be converted to algal biomass due to insufficient light conditions. Inferences from the paired difference analyses would not reveal an impact in the benthic ratios. Rather, the paired difference analyses would show an impact in the surface water and F is less than 1(i.e. $F < 1$).
  - Hypothesis 2b is that there is an impact, but it is only on the benthic substrate. Under this supposition, the reclaimed water irrigation is impacting the surface water, but algae are converting the composition of the water to benthic form. $F < 1$, but this can only be inferred from the paired differences in the nutrient ratios and cannot be inferred from the pHREEQc model.
- Hypothesis 3 is that an additional source is interfering with any impacts of the reclaimed water on the surface water; thus, confounding any inferences from the paired differences. Also, the flow ratio, *F*, would not be consistent among the nine surface water analytes. In this case, samples from this additional source would need to be obtained and the conceptual model (and pHREEQc model) would require a re-specification. A failure of the data sets to inform on the plausibility of either Hypotheses 1 or 2 may point to this Hypothesis.

The data from the cumulative sample periods of Phase 1 and Phase 2 are assessed under this framework to determine the presence or absence of an impact.

Results and Discussion

A cursory review of the data indicates that most downstream sites are higher in nitrogen than upstream sites, indicating that the creeks may be experiencing an impact from the application of high nutrient reclaimed water irrigation. However, it is important to thoroughly explore the data to ensure that the differences are statistically significant and can be attributed to the potential source.

The Methods section of this report describes an analytical model that provides three exclusive hypotheses to explore the data and explain the phenomena (i.e. characterize the change in the composition of downstream surface water). This section presents the empirical data and describes how it informs the possibility of one of the three competing hypotheses. The results of the sampling are evaluated in the context of four primary data sets. These sets are presented in the following order to substantiate the presence of an impact in the surface water, the percent contribution of the impact in the surface water, and characterize the impact in the surface water as follows:

1. **Confidence Intervals** of the mean paired differences in the surface water are depicted as bar graphs to serve as a preliminary indication of whether or not there is an impact to each of the creeks (Figures 5-12) and can be seen in tabular form in Appendix A. Additionally, confidence intervals of the mean benthic ratios of C:N, C:P and chlorophyll *a* (Figures 13-15) are presented

as further evidence of a potential impact as benthic communities uptake nutrients from the water column and may indicate impacts which might otherwise be hidden in the water column.

2. The **Geochemical pHREEQc model** estimates the percent contribution that the downstream water is influenced by the upstream water (Figures 16-19).

3. **Piper plots** are graphical depictions that distinguish different types of source waters and can be used to identify changes, trends, and mixing of ion compositions (Figures 21- 23).

4. **Total nitrogen along with benthic stoichiometry differences** are depicted in order to visualize differences in chemical and biological water quality from the potential impact (Figures 30-33).

The four data sets described above can be linked to the four hypotheses in the following manner:

- **Hypothesis 1** would be disproven if any of the confidence intervals (either surface water or benthic ratios) show a significant difference from upstream to downstream. That is, if the confidence intervals for the mean paired difference in the surface water or periphyton do not encompass zero, then that is an indication of an impact on the surface water.

- The Geochemical pHREEQc model can be used to examine the plausibility of **Hypothesis 2a and 2b**. The model provides an estimate of the percent contribution of upstream water and reclaimed water to the downstream water. If this percent contribution is consistent among a majority of the constituents sampled then that not only points to the source of the disturbance in the creek, but also to the amount of influence in the creek from reclaimed water. Further strength is given to this hypothesis if the analysis of confidence intervals also shows a non-zero confidence interval for each constituent in the creek. Flow measurements and piper plots can be used to validate this hypothesis.

- Finally, if the analysis provides insignificant results without a clear signal, then that may suggest **Hypothesis 3** (i.e. an alternative source of the impact) which would require more studies to determine the alternative source.

Confidence Intervals of the Mean Paired Differences

Confidence intervals of the mean paired difference in surface water parameters for each creek are presented in Figures 5 through 12. Bartholomew Park is shown first (Figures 5 and 6), followed by Morris Williams at the mainstem (Figures 7 and 8), Morris Williams at the central tributary (Figures 9 and 10), and finally Roy Kizer at Williamson Creek (Figures 11 and 12). The tabular results from this analysis can be found in Appendix A. Nitrate+nitrite is significantly higher in the downstream surface water sample (Figure 5) while there is a significant increase in the magnesium, potassium, sulfate, alkalinity, chloride, sodium, and calcium ions in the downstream surface water (Figure 6) at Bartholomew Park. The positive differences in these analytes imply surface water impacts from the reclaimed water irrigation at Bartholomew Park.

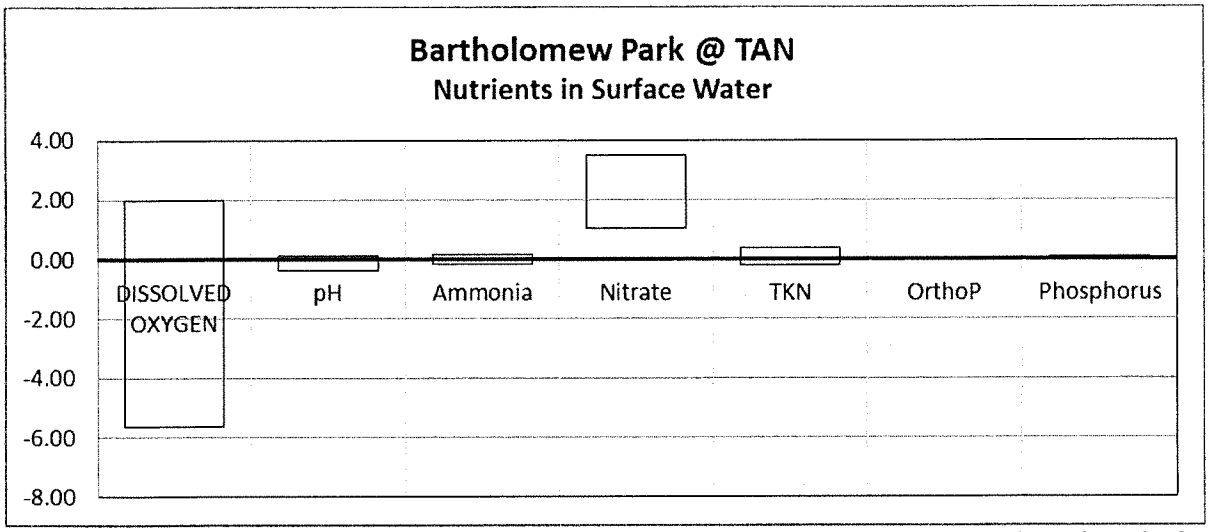


Figure 5: Confidence Intervals of the Mean Paired Difference of dissolved oxygen, pH, and nutrients in the water column collected upstream and downstream of Bartholomew Park. Nitrate was significantly higher in Tannehill Creek downstream of Bartholomew Park.

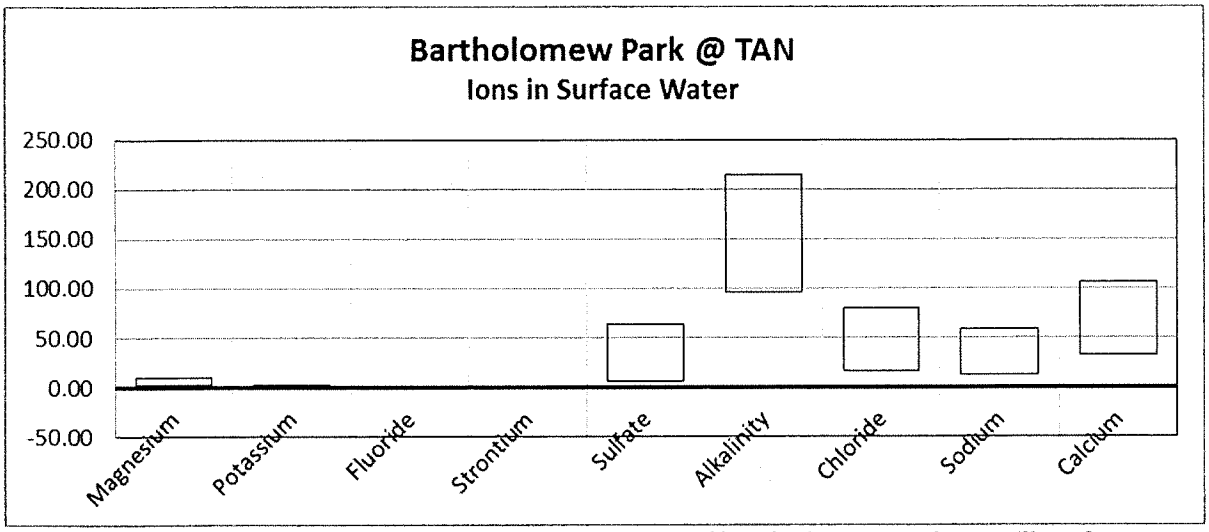


Figure 6: Confidence Intervals of the Mean Paired Difference of ions in the water column collected upstream and downstream of Bartholomew Park. Magnesium, potassium, sulfate, alkalinity, chloride, sodium, and calcium were all significantly higher in Tannehill Creek downstream of Bartholomew Park.

Figures 7 and 8 indicate that there is statistically no difference for most of the nutrients and ions in the surface water at Morris Williams in the mainstem of Tannehill Creek with three exceptions. Alkalinity and calcium ions are at concentrations *less* than upstream samples. TKN is at concentrations slightly higher than upstream. Thus, this particular analysis does not indicate a discernable impact from reclaimed water[1]. However, under the framework stated in the Methods section, there remains the possibility that any impact has been latent in the benthic algae data (Hypothesis 3) or is being diluted by

[1] Given the number of comparisons made in this report, a small but non trivial number of those comparisons may be expected to give a Type I error. It is possible, but cannot be verified with current data, that TKN is a false positive.

groundwater influence (Hypothesis 4). The most likely hypothesis for this creek will be determined from results for the pHREEQc model in the next section.

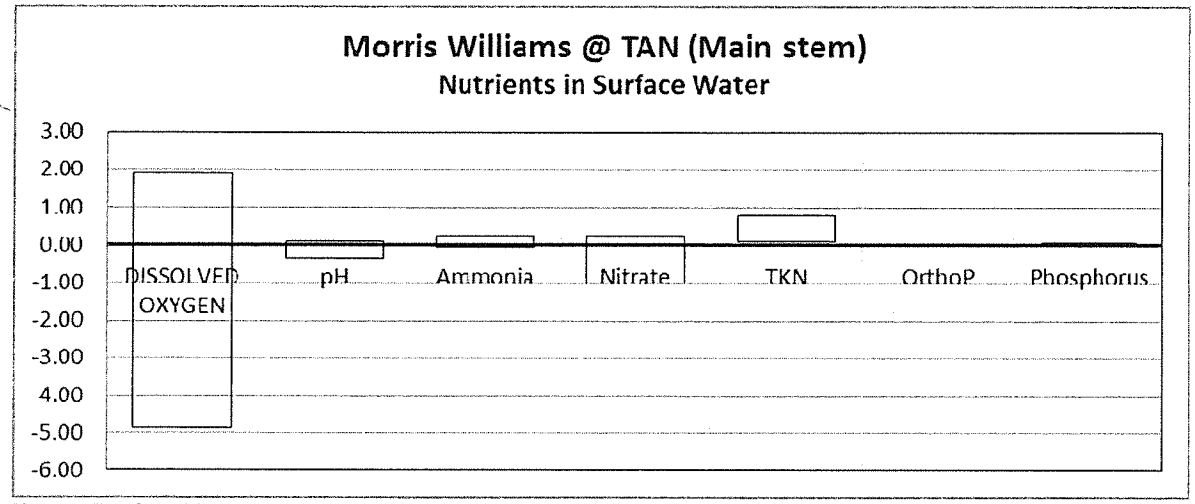


Figure 7: Confidence Intervals of the Mean Paired Difference of DO, pH, and nutrients in the water column collected upstream and downstream of Morris Williams. Of these parameters, only TKN was significantly higher in Tannehill Creek downstream of Morris Williams.

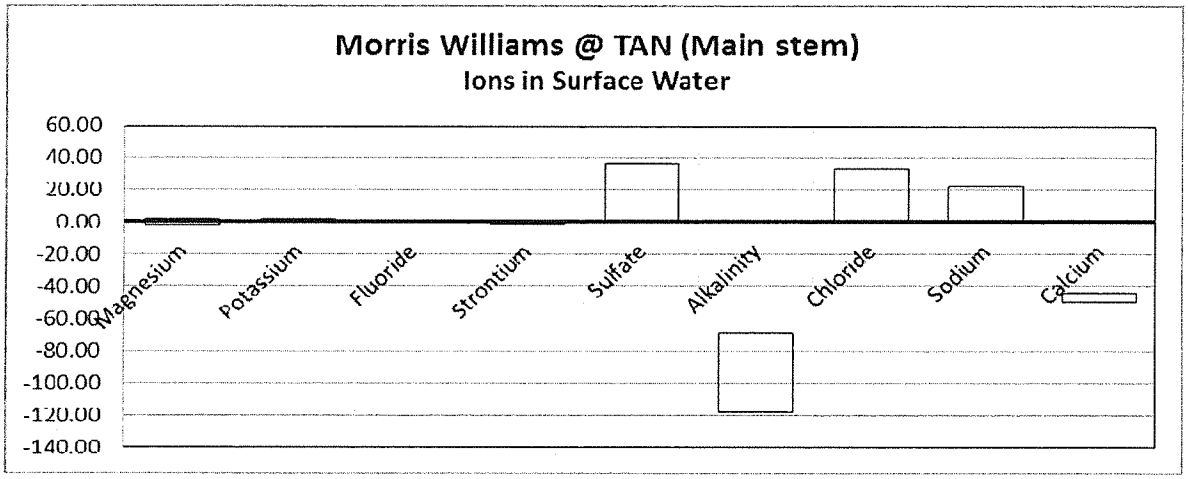


Figure 8: Confidence Intervals of the Mean Paired Difference of ions in the water column collected upstream and downstream of Morris Williams. Alkalinity and calcium were significantly lower in Tannehill Creek downstream of Morris Williams.

Similarly to Morris Williams mainstem of Tannehill Creek, Figures 9 and 10 below show that for the Morris Williams central tributary, differences between downstream and upstream samples were insignificant, with the exception of pH and nitrate.

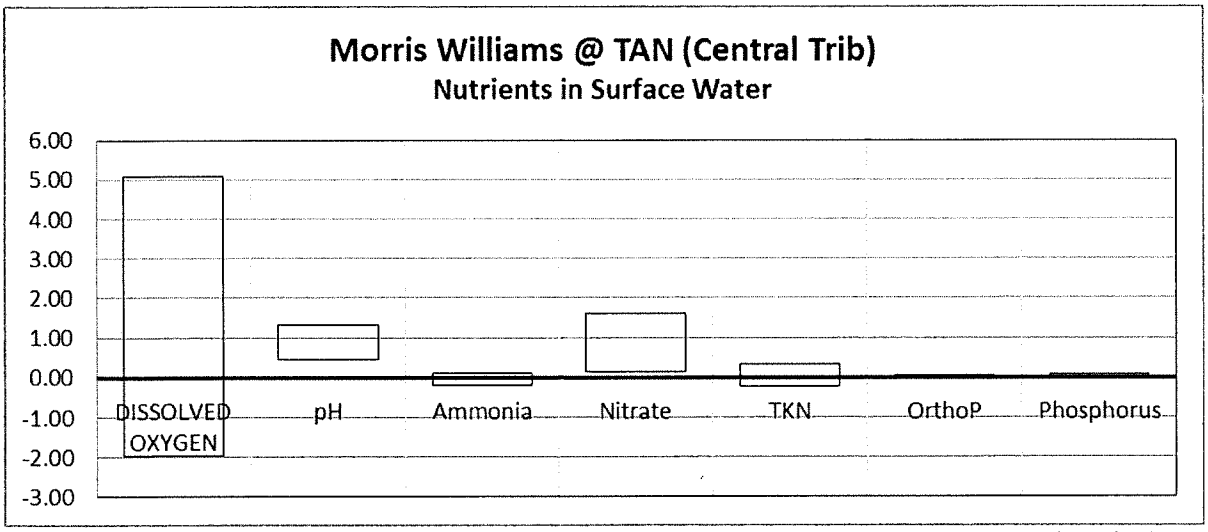


Figure 9: Confidence Intervals of the Mean Paired Difference of dissolved oxygen, pH, and nutrients in the water column collected upstream and downstream of Morris Williams within a tributary running through the golf course. Out of these parameters, only pH and nitrate were significantly higher in the tributary downstream of Morris Williams.

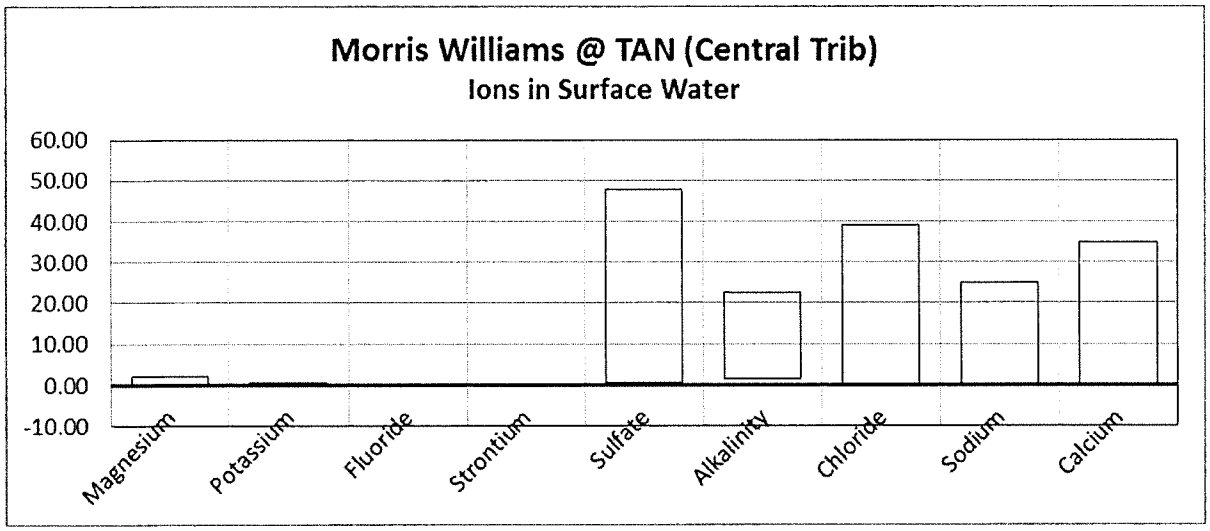


Figure 10: Confidence Intervals of the Mean Paired Difference of ions in the water column collected upstream and downstream of Morris Williams within a tributary running through the golf course. None of these parameter were significantly different in the tributary downstream of Morris Williams.

Results from Roy Kizer on Williamson Creek (Figures 11 and 12) showed impacts similar to that of Bartholomew Park. Nitrate+nitrite concentrations in downstream samples were higher than upstream samples and most of the downstream samples showed elevated ion concentrations compared to upstream indicating that there was a statistically significant impact to the surface water

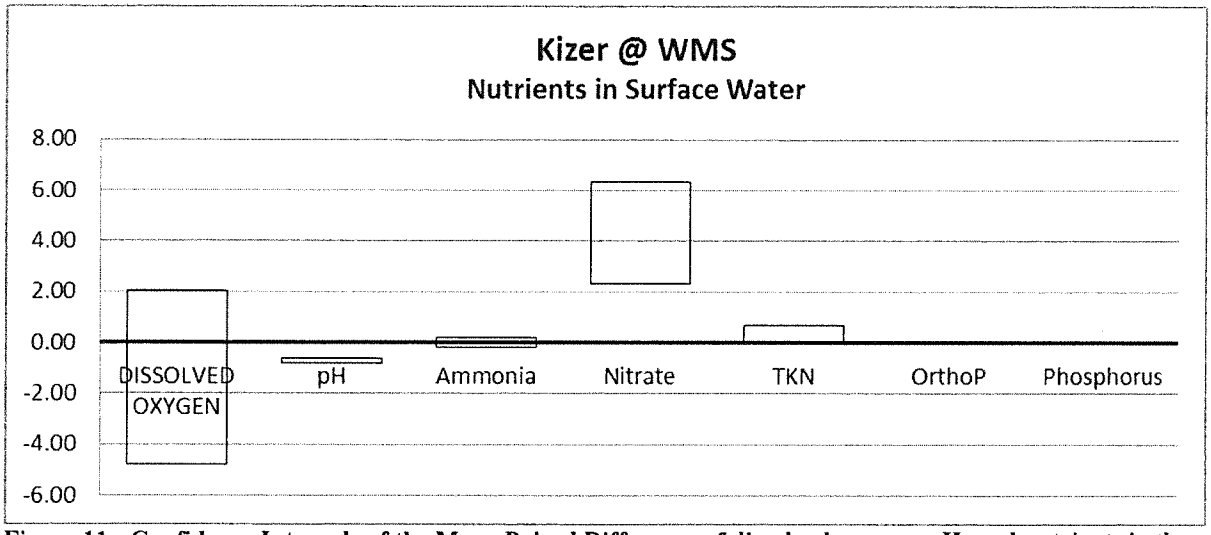


Figure 11: Confidence Intervals of the Mean Paired Difference of dissolved oxygen, pH, and nutrients in the water column collected upstream and downstream of Roy Kizer. Nitrate was significantly higher in Williamson Creek downstream of Roy Kizer while the pH was significantly lower.

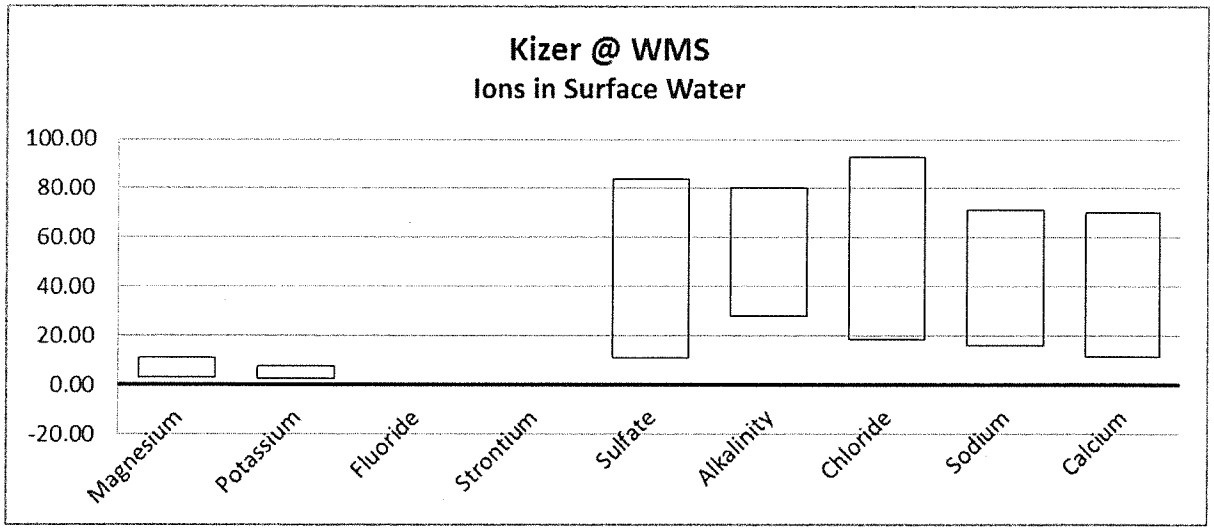


Figure 12: Confidence Intervals of the Mean Paired Difference of ions in the water column collected upstream and downstream of Roy Kizer. Magnesium, potassium, sulfate, alkalinity, chloride, sodium, and calcium were significantly higher in Williamson Creek downstream of Roy Kizer.

Based on the confidence intervals of the mean paired difference in surface water parameters for each creek, there appears to be statistically significant differences in samples taken between upstream and downstream locations at Bartholomew Park and at Roy Kizer. Differences in surface water samples taken between upstream and downstream samples at the two tributaries in Morris Williams were more ambiguous. However, the next set of confidence intervals to be discussed (regarding the benthic ratios) reduces that ambiguity.

None of the creeks sampled showed any differences in fluoride or strontium concentrations. It is suspected that fluoride, which is a negatively charged ion, is only attenuated by vegetation, since cation ion exchange with clay in soil is unlikely due to the negative charge of clay. Plant uptake studies using fluoride-rich irrigation water show that fluoride accumulates in various plant parts. The root accumulates most of the fluoride supplied through irrigation water (Pollick 2004).

Confidence Intervals of the C:P, C:N and benthic chlorophyll *a*

Results for the benthic C:P, benthic C:N, and benthic chlorophyll *a* content of samples collected upstream and downstream of irrigation sites are displayed in Appendix C with additional graphs in Appendix D. Benthic C:P significantly decreased from upstream to downstream as demonstrated by a mean paired difference confidence interval that did not include zero (Table 3). There was no significant difference from upstream to downstream for benthic C:N or benthic chlorophyll *a* as the individual confidence intervals each contained zero.

Table 3: Mean paired difference (95% confidence interval) in the benthic C:P, benthic C:N, and benthic chlorophyll *a* content computed downstream to upstream. The probability that the difference is strictly positive or negative is also included. A decrease in the benthic ratios or increase in the chlorophyll *a* content would show degradation downstream.

Parameter	Mean Difference	95% CI	Prob > 0	Prob < 0
Carbon to Phosphorus	-6.48	(-10.49,-2.76)	--	1.0
Carbon to Nitrogen	-0.71	(-1.96,0.38)	--	0.89
Chlorophyll *a*	16.72	(-23.26,53.58)	0.821	--

The decreasing pattern in the benthic C:P (Figure 13A) suggests an increase in phosphorus load to the creek which was not detectable in the water column, possibly due to nutrient uptake by the benthic algae. This is most pronounced in samples collected in the mainstem of Tannehill creek upstream and downstream of the Morris Williams golf course (Figure 13B).

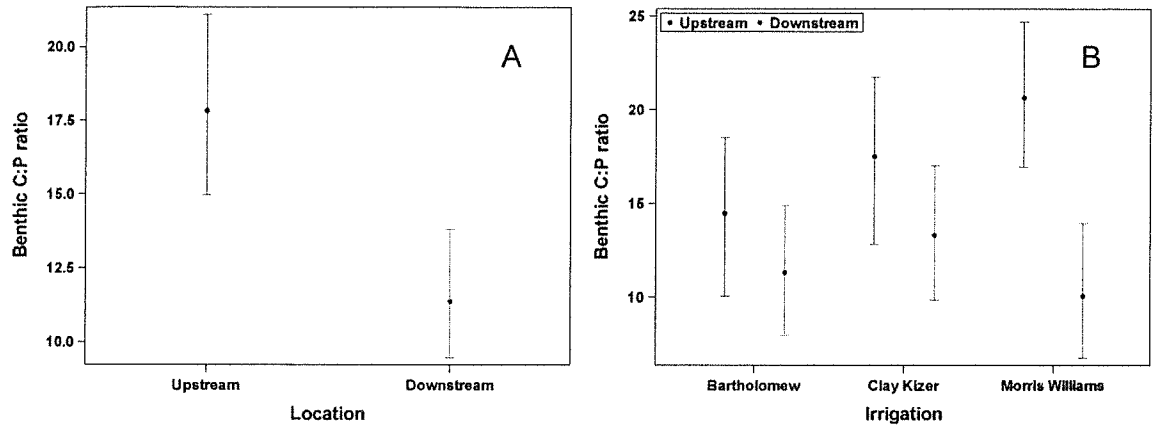


Figure 13: The mean and 95% Confidence Interval of benthic Carbon (C) to Phosphorus (P) in upstream and downstream samples pooled from all reclaim irrigation sites (A), and partially pooled for distinction between each reclaimed irrigation site (B). The benthic C:P was significantly lower downstream of reclaimed irrigation sites.

There was no significant pairwise difference in benthic C:N upstream and downstream of the reclaimed water irrigation sites. There was a decreasing pattern in the benthic C:N (Figure 14A) which would indicate degradation downstream of the irrigations sites and the probability of the difference to be below zero was 0.89 based on the data collected. This suggests that the decreasing pattern might be real and not a random phenomenon. Given several more sampling events, the pairwise difference in C:N upstream and downstream of the irrigations sites might be determined to be significant.

The variability for benthic C:N in all upstream site locations was much higher than the variability at downstream locations (Figure 14B). This was most likely due to a high benthic C:N collected upstream of Clay Kizer in October 2014. This would impact the variability at all upstream sites because the data is partially pooled and not analyzed separately.

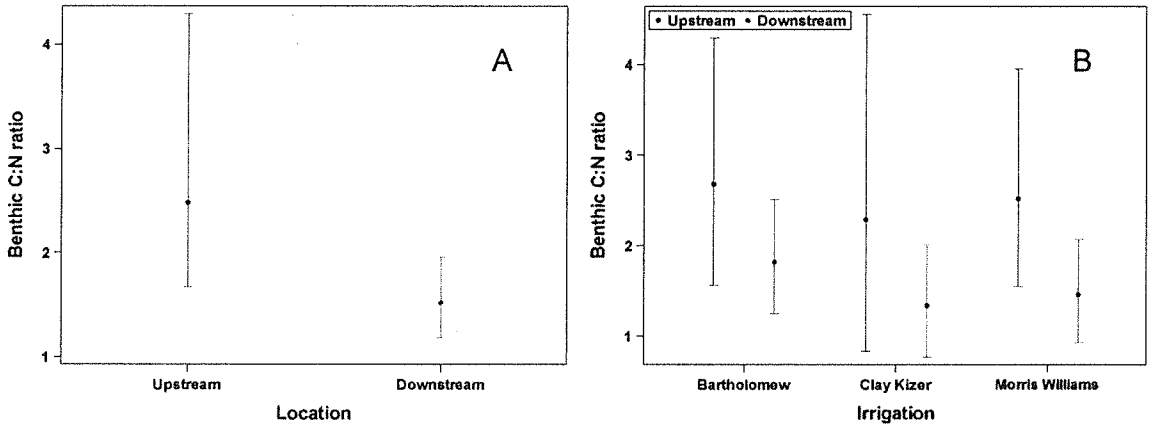


Figure 14: The mean and 95% Confidence Interval of benthic C:N in upstream and downstream samples pooled from all reclaimed irrigation sites (A), and partially pooled for distinction between each reclaimed irrigation site (B). There was no significant pairwise difference in benthic C:N upstream to downstream.

There was not a significant difference in benthic chlorophyll *a* (mg/m^2) upstream to downstream of the reclaimed water irrigation sites. While it appeared that there were higher chlorophyll *a* concentrations downstream of irrigation sites when all of the data was pooled (Figure 15A), the parameter was highly

variable and no clear pattern was discernible based on pairwise comparisons. The probability for chlorophyll *a* concentrations to be higher downstream of the irrigation sites was only 0.821 and it is unclear what inference further sampling would lead to without the inclusion of more explanatory variables. Chlorophyll *a* concentrations at Bartholomew showed more signs of degradation than did the other two irrigation sites (Figure 15B). The Bartholomew Park irrigation site may be impacting Tannehill Creek upstream of the Morris Williams golf course irrigation site.

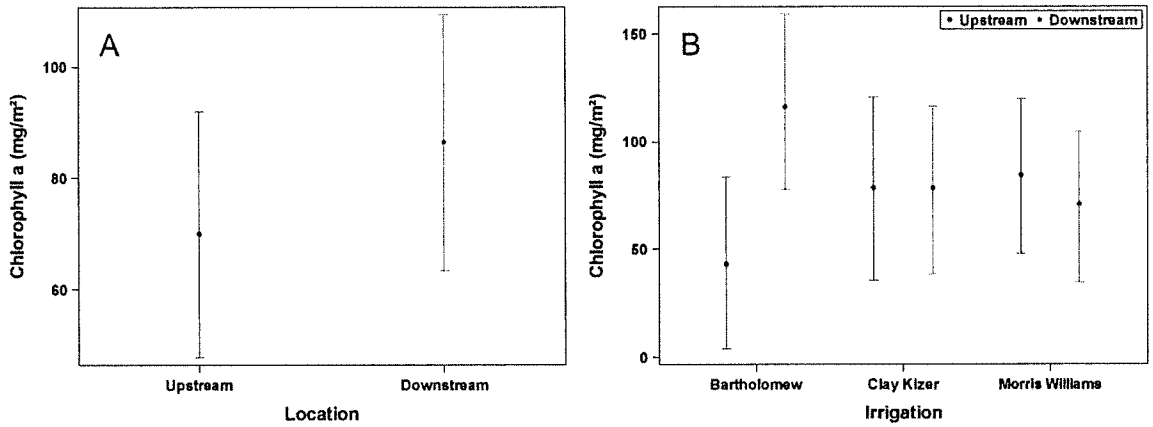


Figure 15: The mean and 95% Confidence Interval of benthic algae chlorophyll *a* (mg/m²) in upstream and downstream samples pooled from all reclaimed irrigation sites (A), and partially pooled for distinction between each reclaimed irrigation site (B). There was no significant pairwise difference in benthic chlorophyll *a* upstream to downstream.

Geochemical pHREEQc Model

Analysis of the confidence intervals on Bartholomew Park and Roy Kizer infers an impact to surface water from reclaimed water irrigation. If this is true, it should be supported by pHREEQc modeling. The overarching framework postulated in the Methods section suggests that any contribution to the downstream samples originate from a flow-weighted mixture of two sources: upstream water and reclaimed water. This section examines the influence of these two samples on the downstream sample. Medians of the upstream and reclaimed water concentration samples were input into the model (see Appendix B for the values). Table 4 shows an estimate of the downstream concentration under either solely upstream influenced conditions or under solely reclaimed water influenced conditions for the nine key ions collected in the surface water.

Table 4: Estimated downstream concentrations (mg/L) from the pHREEQc model under solely upstream influenced conditions and solely reclaimed water influenced conditions.

	Cl^-	Na^+	Mg^{+2}	K^+	SO_4^{-2}	F^-	NO_3^-	Alk	Ca^{+2}
Bartholomew Park @ TAN									
Upstream	15.5	12.5	3.6	2.3	13.9	0.3	0.1	108	44.4
ReclaimedWW	113.6	120.2	25.1	14.4	134.6	1.9	29.1	382	161.6
Morris Williams @ TAN (mainstem)									
Upstream	34.0	25.4	5.4	1.9	30.2	0.3	0.7	243	102.0
ReclaimedWW	113.0	120.7	25.4	14.4	134.6	1.9	29.1	382	161.1
Morris Williams @ TAN (central tributary)									
Upstream	16	19.7	4.6	2.6	10.8	0.4	0.3	210	72.2
ReclaimedWW	113.0	120.7	25.2	14.4	134.6	1.9	29.1	382	158.4
Roy Kizer @ WMS									
Upstream	31.0	20.0	7.3	2.2	33.2	0.28	0.7	200	83.2
ReclaimedWW	132.1	84.2	14.5	5.4	125.9	0.43	9.0	282	187.7

If the conceptual model is close to reality, then the concentrations of the downstream samples should be between the upstream and reclaimed water concentrations bounds, inclusively, given in Table 4 for each ion for each park. Downstream samples with concentrations close to those of upstream samples would be mostly upstream influenced, whereas downstream samples with concentrations close to those of the model-predicted reclaimed water samples would be mostly influenced by reclaimed water.

Applying the conceptual model also gives the advantage that the fractional amount of influence, *F*, from each source can be inferred. The results from the model can be superimposed on the confidence intervals of the mean concentration for each constituent under upstream, downstream, and reclaimed water samples in Bartholomew Park (Figure 16).

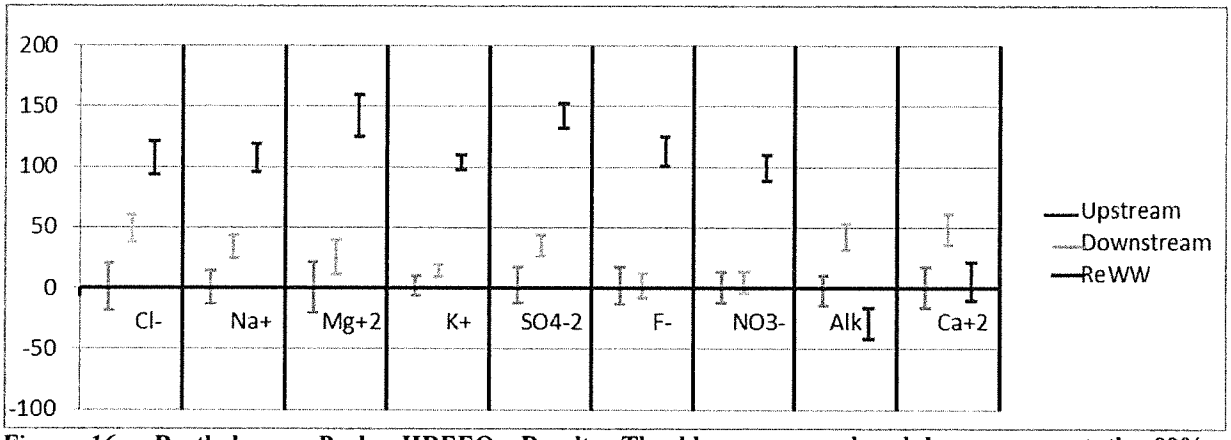


Figure 16: Bartholomew Park pHREEQc Results. The blue, grey, and red bars represent the 99% confidence intervals of the mean concentration for each analyte. Confidence intervals are standardized to a scale of 0 to 100 where 0 denotes the pHREEQc model prediction of the upstream concentration and 100 signifies the pHREEQc model prediction of the reclaimed water after its interaction with the soil. With the exception of fluoride and nitrite, the confidence intervals of the nine downstream constituents (grey bars) encompass approximately a score of 40 on the y-axis. This indicates a 40% contribution from reclaimed water.

As an example to aid interpretation, the pHREEQc model for Bartholomew Park predicted that if only upstream waters were influencing the downstream waters, the downstream samples would have a chloride concentration of 15.5 mg/L (see Table 4) or a standardized score of 0 (i.e. 0% reclaimed water) (see Figure 16). If reclaimed water was the only influence on the downstream sample, then the downstream samples would have a chloride concentration of 113.6 mg/L or a standardized score of 100 (i.e. 100% reclaimed water). The confidence intervals on the mean concentrations for the upstream and reclaimed water samples include (as it should) the 0 and 100 scores, respectively. The confidence intervals of the mean concentrations of the downstream samples, however, all cluster around the score of approximately 40. Thus, one may infer that the downstream waters are composed of 40% reclaimed water and 60% upstream water, which is consistent with paired difference results. Furthermore, flow measurements taken during the sample visits indicate that *F*, the fraction of upstream to downstream flow, averages at about 60%. This is consistent with the pHREEQc results and verifies an impact to the stream at Bartholomew Park (Figure 16).

The Bartholomew Park pHREEQc model predicted alkalinity and calcium concentrations of 382 mg/L and 162 mg/L, respectively, for a purely reclaimed water downstream sample, when the actual reclaimed water sample had concentrations of 28 mg/L and 50 mg/L, respectively. This may indicate that as the reclaimed water is moving through the soil, it is dissolving the calcium in soil and transporting this

calcium with it. This may explain why the alkalinity and calcium concentrations in the downstream samples are much higher than that of the upstream or reclaimed water concentrations. Similarly, the pHREEQc model predicted that magnesium concentrations in purely reclaimed water downstream sample would be much lower than that of the actual reclaimed water concentration. This indicates that as the reclaimed water is moving through the soil, it is losing magnesium.

Fluoride and nitrate+nitrite concentrations in the downstream sample do not appear to adhere to the pattern predicted for other constituents at Bartholomew Park. One explanation may be the limited nature of the pHREEQc modeling attempted for this report. Nitrate+nitrite will undergo a conversion to another species that was not input into the model. For fluoride, it is hypothesized that the soil will adsorb the fluoride to make fluorite using a reaction not yet programmed into pHREEQc.

With Bartholomew Park results presented in detail as a case study, modeling results for the remaining creeks can be discussed briefly. The impact from the reclaimed water on the surface water of Morris Williams is either subdued owing to large variability in the samples or non-existent (Figure 17-18). The confidence intervals also show that the surface water in the main stem is losing alkalinity and calcium as it advances downstream. Alkalinity and calcium in the central tributary, on the other hand, are highly variable with both downstream and upstream samples showing similar concentrations. Flow measurements indicate that estimates of F, the fraction of upstream to downstream flow, is about 90%, which may explain the lack of an impact on surface water on the main stem. Thus, nutrient ratios for this park may be needed to ascertain an impact.

For the central tributary, however, flow upstream is greater than downstream for two of the four site visits removing the possibility of verifying the actual flow measurements with the pHREEQc results. This variation of flow in time also emphasizes that flow is a confounding factor in the analysis for this creek. Since pHREEQc gave consistent results of F, groundwater influences may be ruled out.

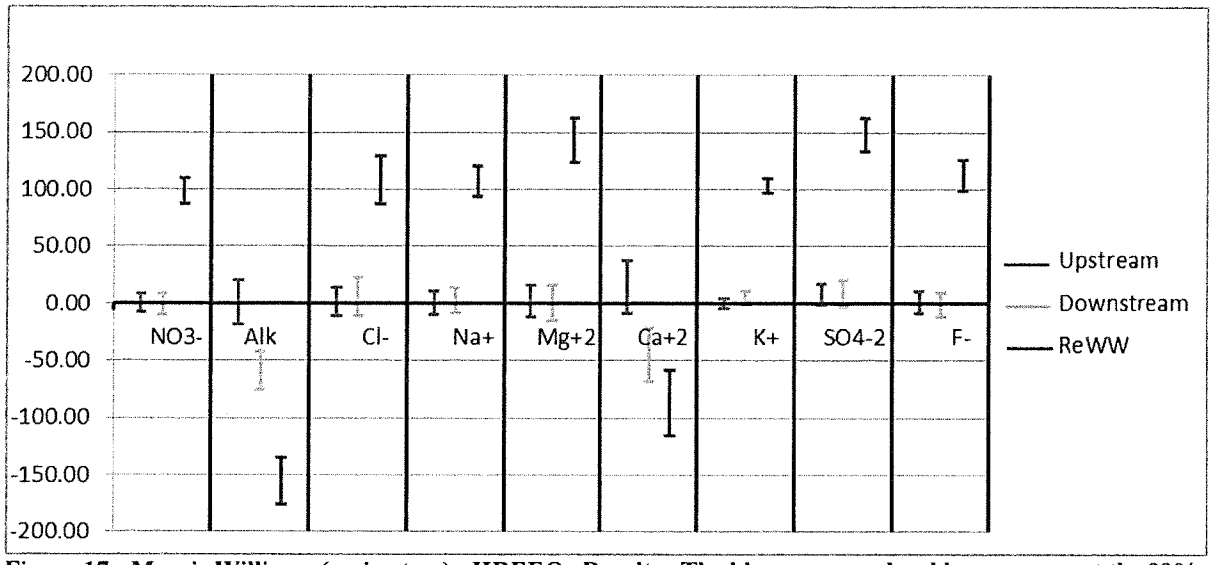


Figure 17: Morris Williams (main stem) pHREEQc Results. The blue, grey, and red bars represent the 99% confidence intervals of the mean concentration for each analyte. Confidence intervals are standardized to a scale of 0 to 100 where 0 denotes the pHREEQc model prediction of the upstream concentration and 100 signifies the pHREEQc model prediction of the reclaimed water after its interaction with the soil. With the exception of alkalinity and calcium, the nine downstream constituents (grey bars) contain a score around zero. This indicates a negligible to small impact on the downstream concentrations from reclaimed water. Benthic ratios are needed to determine the presence of an impact.

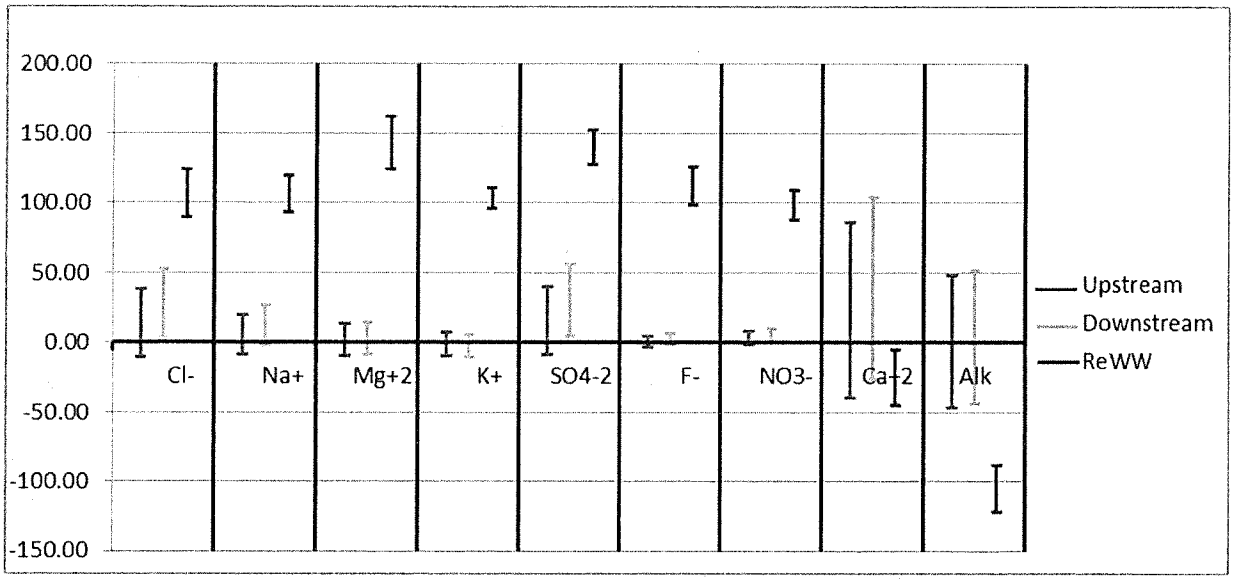


Figure 18: Morris Williams (central tributary) pHREEQc Results. The blue, grey, and red bars represent the 99% confidence intervals of the mean concentration for each analyte. Confidence intervals are standardized to a scale of 0 to 100 where 0 denotes the pHREEQc model prediction of the upstream concentration and 100 signifies the pHREEQc model prediction of the reclaimed water after its interaction with the soil. The downstream constituents (grey bars) have considerable variability making any assessment of impact on the creek difficult. Benthic ratios are needed to determine the presence of an impact.

The impact of the reclaimed water on surface water at the Roy Kizer golf course was similarly assessed (Figure 19). Potassium shows the clearest indication of an influence from reclaimed water at around 30%. This estimate of 30% is certainly within the bounds for chloride, sodium, and magnesium; however, the variability for these analytes dominates any inference that can be made from it. Again, the flow measurements are not consistent across the sampling visits. This makes verification of the pHREEQc model unfeasible. This variation in flow may be contributing to the variability at the site. There exists some variation in the *F* inferred from pHREEQc (Figure 19), which is pointing to a groundwater influence. But given that the paired differences showed an impact in the surface water, this groundwater influence may be considered small relative to the influence of reclaimed water.

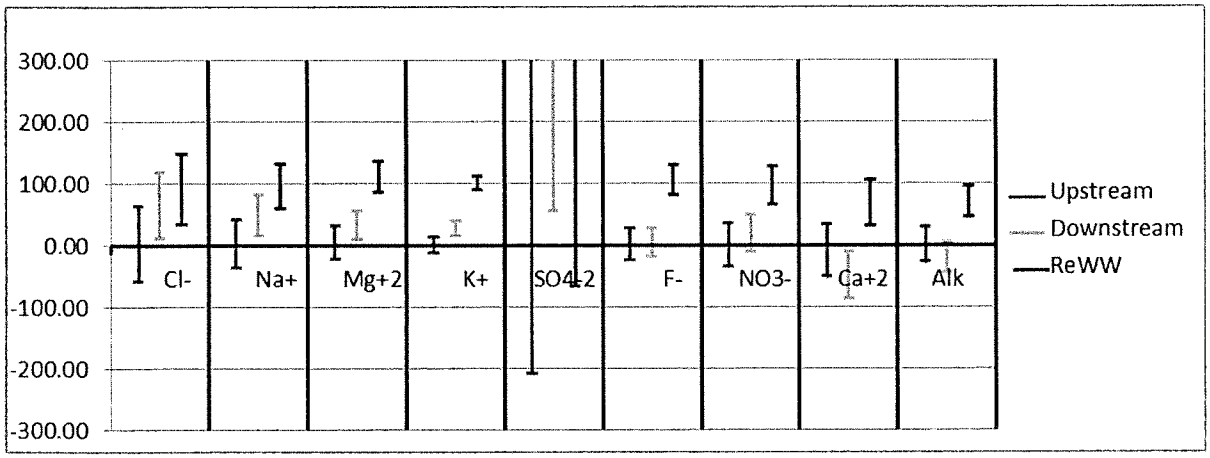


Figure 19: Roy Kizer pHREEQc Results. The blue, grey, and red bars represent the 99% confidence intervals of the mean concentration for each analyte. Confidence intervals are standardized to a scale of 0 to 100 where 0 denotes the pHREEQc model prediction of the upstream concentration and 100 signifies the pHREEQc model prediction of the reclaimed water after its interaction with the soil. The downstream constituents (grey bars) show about a 30% impact due to reclaimed water for chloride, sodium, magnesium, and potassium. The variability in sulfate is extensive and precludes an inference, while downstream concentrations of fluoride and nitrite characteristically show no influence. Downstream concentrations of calcium and alkalinity also appear to show little to no influence due to reclaimed water

Piper Plots

Piper plots, or triangle plots, are typically used to determine the hydrogeochemical facies or classification of natural water. In natural water, the ion composition is controlled by local lithology, the duration of the water-rock and the water-soil interactions, and natural attenuation. In the Austin area, groundwater and surface water is classified as a calcium-bicarbonate hydrogeochemical facies due the carbonate geology that dominates most of the area.

Natural, native groundwater with calcium-bicarbonate hydrogeochemical facies will plot on the left hand side of the diamond-shape area of a piper plot. In contrast, reclaimed water from Austin's municipal supply is considerably higher in sulfate and chloride, and will consequently plot on the right hand side of the diamond-shaped area (Figure 20). The mixing of two distinctly different water types will result in a shift in the ion composition at an impacted monitoring site. In a piper plot, mixing would be indicated if downstream points plot in-between the natural waters on the left and reclaimed water on the right. The magnitude and direction of the linear shift of creek water facies toward the reclaimed water facies would indicate the degree of mixing with or influence from the reclaimed water. Larger shifts will indicate greater amounts of reclaimed water mixing with the natural groundwater or surface water. The magnitude of the shift is also influenced by antecedent weather conditions, creek flow, and irrigation rates. For example, the shift can be muted during high rainfall periods because irrigation rates generally decrease and rainwater runoff has lower concentration of ions.

The mean ion concentrations for calcium, magnesium, potassium, sodium, bicarbonate, chloride, and sulfate at the upstream, the downstream, and the reclaim water monitoring sites are characterized with a piper plot (Figure 20). Each point shown in the diamond-shape and triangular areas is a graphical representation of all ion concentrations reported as the overall percentage of the total cation and anion concentrations.

Consistent with the preliminary results of Phase 1 of this study (Clamann et al. 2014), there is a clear shift in the ion concentrations of downstream samples from a more natural condition towards the more sulfate and chloride-rich composition of reclaimed water (Figure 20). This indicates that reclaimed water is likely mixing with the surface water. The ion composition varies between reclaimed water sources. The reclaimed water irrigated at Bartholomew Park and at Morris Williams Golf Course has a higher sulfate, chloride, and magnesium concentration then the reclaimed water irrigated at Roy Kizer. A similar variation in magnesium concentrations at the springs located on the golf courses that were irrigated with reclaimed water is also reported in a 2007 study (Hiers and Herrington 2007). The variation may be attributed to differences in the chemical composition of the wastewater stream that the two treatment plants (the Walnut Creek Wastewater Treatment Plant and the South Austin Regional Plant) are processing and distributing to the reclaimed water system.

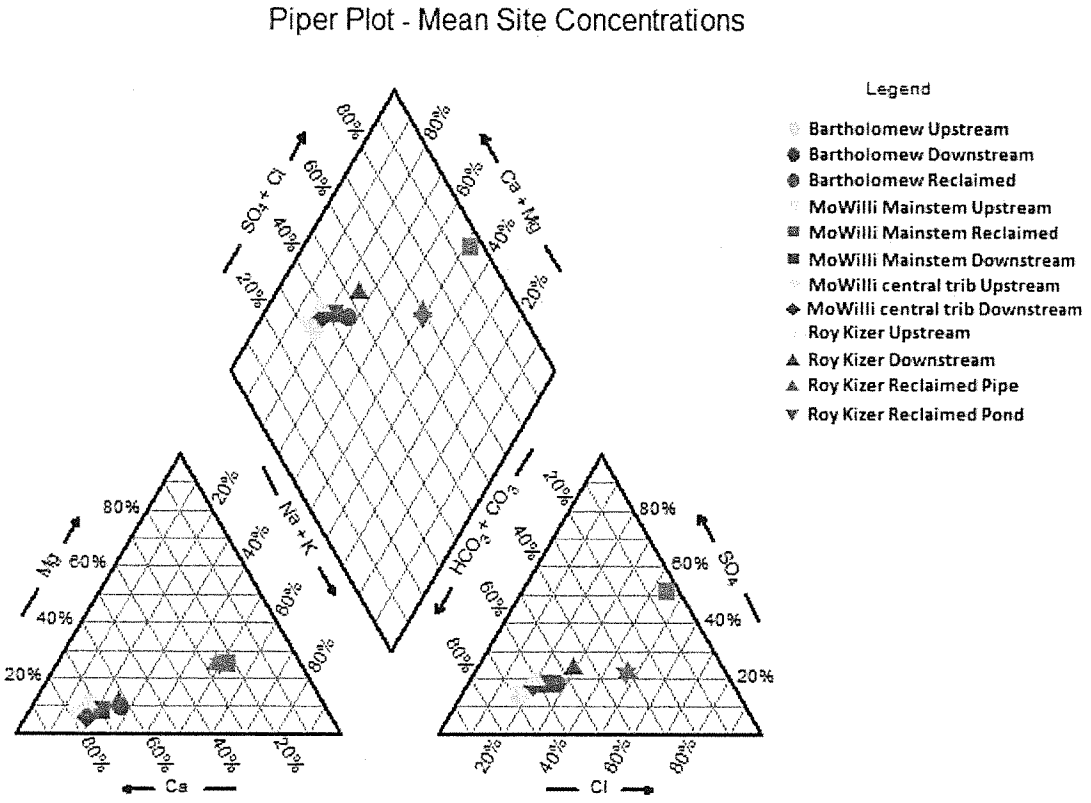


Figure 20: The mean ion concentrations for calcium, magnesium, potassium, sodium, bicarbonate, chloride and sulfate at the upstream, the downstream and the reclaim water monitoring sites.
Upstream sites are in light blue. **Downstream sites are in dark blue.** Reclaimed Water sites are in purple

Piper plots, of the pHREEQc model ion data for the upstream, the downstream, and the reclaimed water sites was constructed (Figure 21). The plots generally show the same drift in the ion data indicative of reclaimed water mixing with natural water at the downstream monitoring sites, with the exception of the

Morris Williams mainstem monitoring site. The Morris Williams mainstem site simulated ion data is different in that the ion data shows little to no variability and no significant difference in ion composition at the downstream site. This suggests that the upstream site may already be impacted by reclaimed water irrigation activities further upstream at Bartholomew Park and/or Mueller Development, which are located upstream of the Morris William Golf Course. However, it is also plausible that irrigation rates in this portion of the golf course were lower so that natural attenuation from the interaction with the soil and vegetation is sufficient to mute measureable effects in the downstream water chemistry.

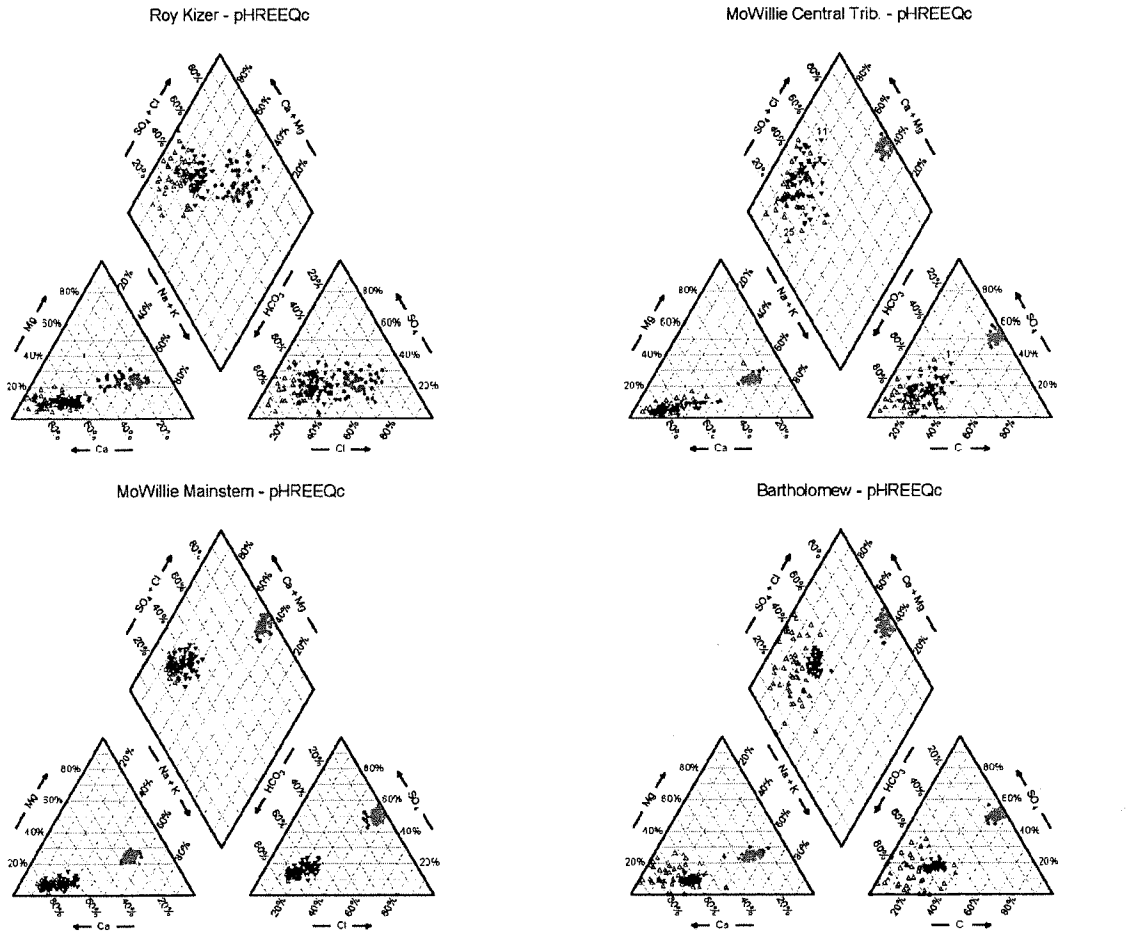


Figure 21: Piper plot of the pHREEQc model ion data for the upstream, the downstream, and the reclaimed source water at each of the study stream reaches

△ = Upstream sites ▲ = Downstream sites ● = Reclaim Water sites

Temporal Trends at Roy Kizer Spring

The Williamson Creek Wastewater Treatment Plant was closed and decommissioned in the early 1970's. Construction of the Roy Kizer Golf Course started in 1994 on the site of the old plant. Around this time the City of Austin discovered that the springs and seeps along Williamson and Onion creeks adjacent to the old treatment plant site had very high nitrate and ammonia concentrations. The δ^{15} Nitrogen isotope samples collected in August 1993 had ratios of 11.6 and 12.9, indicating a biogenic source. Using nitrogen isotope analysis, the nitrogen source was traced to sediment and sludge from the abandoned treatment plant sludge pits. To remediate this impact, during the construction of the golf course the sludge

material was stocked piled and saved for use as top dressing for the greens, tee boxes, and fairway areas so that the turf grass could utilize the nutrients within the sludge. The remediation effort was apparently successful in reducing the elevated nitrate levels observed at several springs along Williamson and Onion creeks, including Roy Kizer Spring (Figure 22). A time-series plot of nitrate+nitrite concentrations at Roy Kizer Spring from 1996 to present indicates a sharp drop in nitrate+nitrite concentration during the first four years after construction of the golf course. This reduction in nutrients were presumably due to the remediation efforts as the newly installed turf grass consumed the nitrogen from nutrient-rich sediment and sludge mixture used as top dressing. By 1998, the nutrient concentrations in spring discharge had decreased to less than 5 mg/L of nitrate+nitrite as nitrogen.

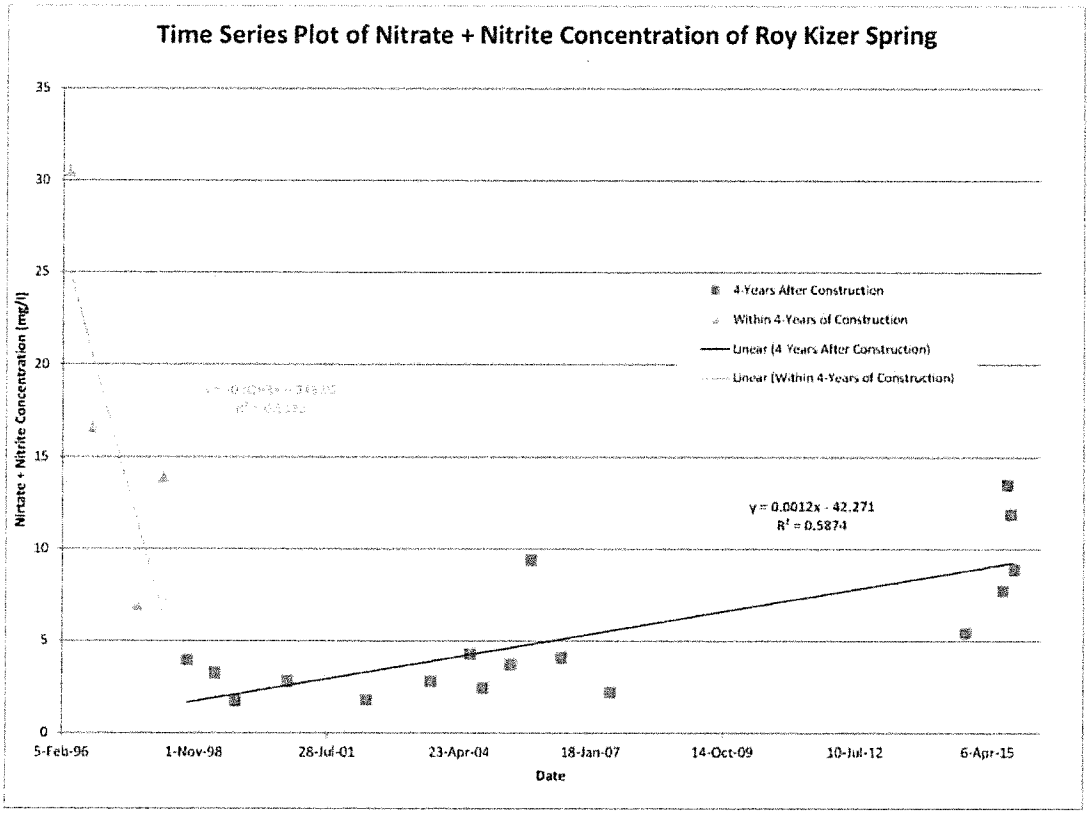


Figure 22: Time-series plot of nitrate+nitrite concentration at Roy Kizer Spring

Based on nitrate levels collected since 1998 and most recently in 2014 and 2015 associated with this study, it appears that nitrate+nitrite concentrations have recently increased to between 5 mg/L and 15 mg/L (Figure 22). Nitrogen concentrations in this range are unusually high for Austin area groundwater which typically has concentrations around 2 mg/L. Of the 2,693 nitrate+ nitrite observations collected by the City of Austin from Austin-area springs from 1968 to present, the 10 highest values were collected from springs on the Jimmy Clay and the Roy Kizer golf courses. Of interest to this study, the 10th highest nitrate+ nitrite value was collected during the recent field efforts on August 27, 2015, at Roy Kizer Spring. Since the Roy Kizer Springshed is located entirely within the golf course, the source of the biogenic influence may be the application of reclaimed water irrigation.

In addition to the spatial differences observed in the ion data between upstream and downstream sites, increases over time in sulfate and chloride concentrations may be observed at Roy Kizer Spring. The spring has occasionally been monitored by the City of Austin since the mid-1990's. Sixteen samples have been collected since August of 1996 to present (Figure 23). Piper plots indicate that the groundwater discharge from the spring is enriched with sulfate and chloride likely from reclaimed irrigation water similar to that as shown in the previously described spatial comparison between upstream and downstream sites and the pHREEQc modeled results. Since the springshed for this spring is located entirely within Roy Kizer Golf course, the source for the increase is most likely reclaimed water irrigation and grass management practices.

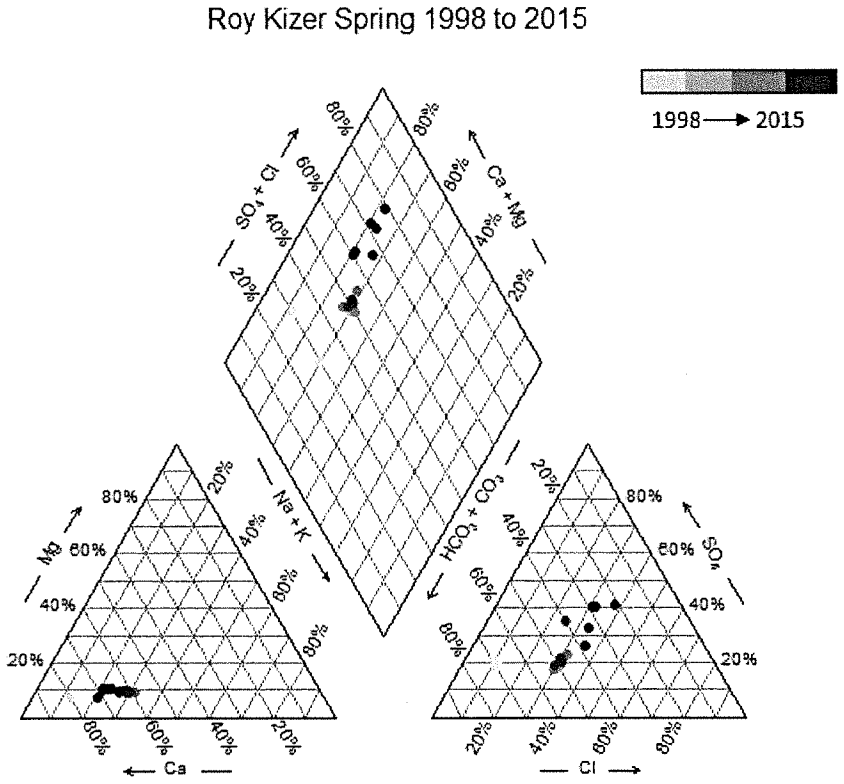


Figure 23: Piper plot of ion data collect at Roy Kizer Spring from August 1998 to December 2015. Note the temporal trend in the middle and right-hand plots that indicate a shift in the composition.

Bivariate plots of specific conductance and nitrate+nitrite nitrogen

Since 1992, the City of Austin Watershed Protection Department has been periodically monitoring selected springs adjacent to several golf courses. At least 25 springs from nine different golf courses have been monitored over the past 25 years. The golf courses include Jimmy Clay, Roy Kizer, Morris Williams, Austin Country Club, Balcones Country Club, Barton Creek Fazio, Barton Creek Crenshaw, Lost Creek and Avery Ranch. Except for Avery Ranch, which uses native surface water from Brushy Creek for irrigation, all of the golf courses use reclaimed water or a mixture of groundwater and reclaimed water for irrigation. The golf course at Great Hills uses both reclaimed water and brackish groundwater from the Trinity Aquifer.

Samples collected at Avery Ranch Spring were used as the background samples for the purposes of this assessment. The mean conductivity at Avery Ranch Spring was 770 µS/cm (95% CI = 741.0-798.3 µS/cm) (Figure 24). The mean conductivity was significantly higher at Roy Kizer Spring (mean =

1120.8 µS/cm, 95% CI = 1016.8-1224.7 µS/cm) (t-test with unequal variance, $p < 0.0001$), which is slightly inside the range of conductance of groundwater that is considered "brackish". The most recent samples collected at Roy Kizer Spring have higher than normal conductivity readings. The range of conductivity is even higher (between 1000 µS/cm to 3000 µS/cm) at the Great Hills Golf Course resulting from the combined use of reclaimed water and Trinity Aquifer water.

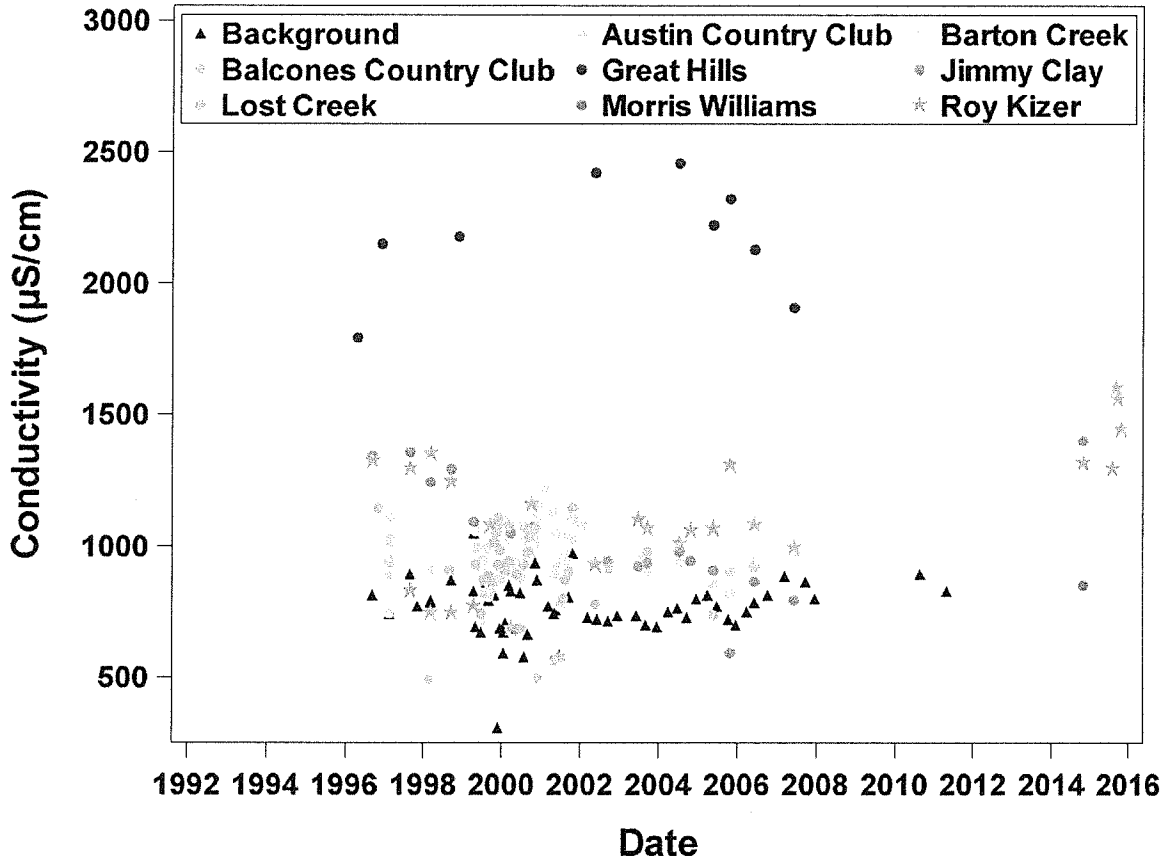


Figure 24: Conductivity at springs near Austin area golf courses (COA data). Most golf courses assessed that irrigate with reclaimed water generally have conductivity values above 770 µS/cm, the background condition for the purposes of this analysis. The high values at Great Hills results from the mixed use of reclaimed water and Trinity Aquifer groundwater.

Nitrate+nitrite nitrogen concentrations at golf course influenced springs in Austin range from 0.1 to 30 mg/L (Figure 25). Antecedent weather, irrigation rate, and spring discharge are all potential confounding factors that contribute to high variability in the data set. However, the mean nitrate+nitrite concentration at Avery Ranch Spring (background) was 2.26 mg/L (95% CI = 1.98 - 2.53 mg/L) which is significantly lower than the mean nitrate+nitrite concentration at Roy Kizer Spring (mean = 6.19 mg/L, 95% CI = 4.61 – 7.76 mg/L) (t-test with unequal variance, $p = 0.0001$). Roy Kizer Spring displays very high concentrations of nitrate in the most recent samples.

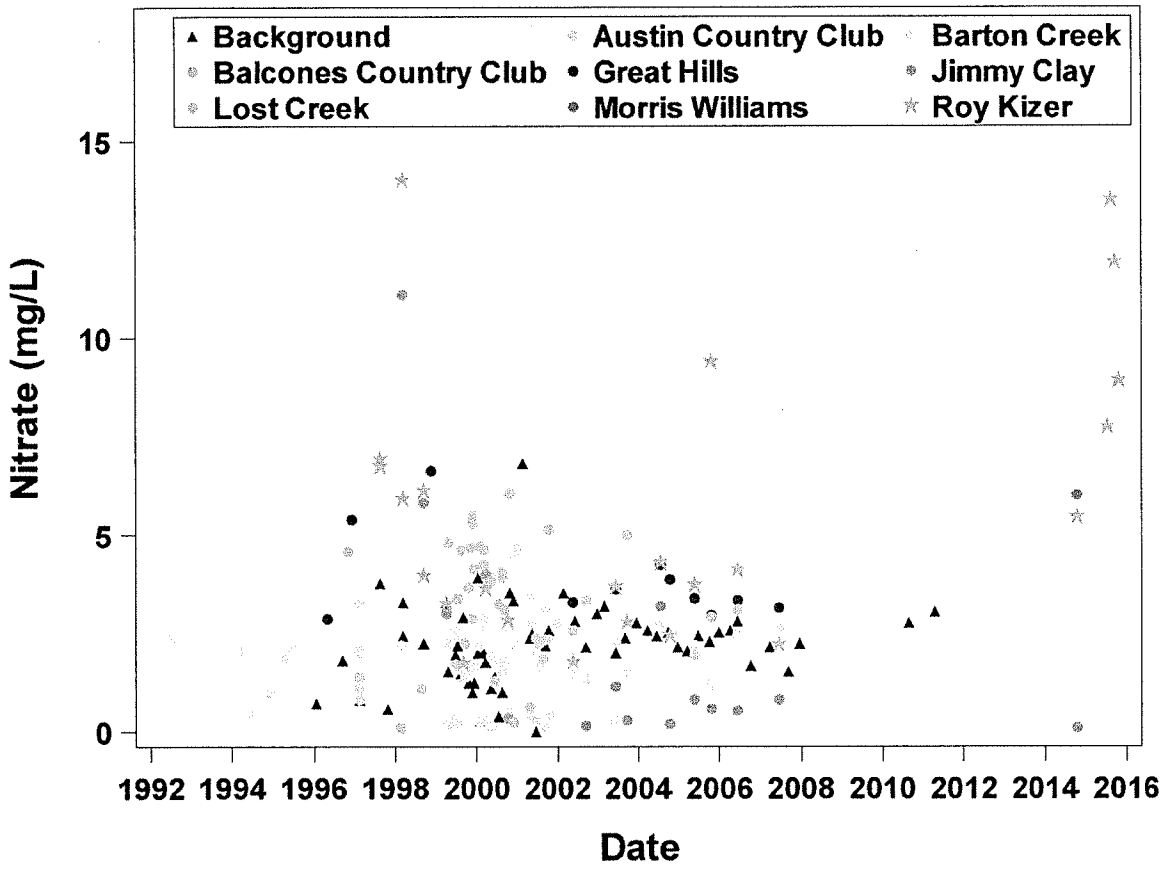


Figure 25: Nitrate+nitrite at springs near Austin area golf courses, showing that some of the highest concentrations were collected at Roy Kizer Spring during this study (2014-2015). Background concentrations for the purposes of this analysis, collected at Avery Ranch golf course (no reclaimed water irrigation), are generally below 5 mg/L.

A bivariate plot of conductivity and nitrate+nitrite nitrogen shows a positive linear relationship between increasing conductivity measurements and nitrate+nitrite nitrogen at the background golf course spring. This indicates that conductivity and nitrate+nitrite nitrogen may increase together (Figure 26). The ellipse shown in the bottom left corner of Figure 26 illustrates the zone of the 95% interval for background conductivity versus nitrate+nitrite. Data that is outside of the 95% ellipse may be considered to be different from background. There are a substantial amount of data points collected at Roy Kizer and Jimmy Clay golf courses that are outside this 95% ellipse and may be considered as different (in this case higher) than background conditions.

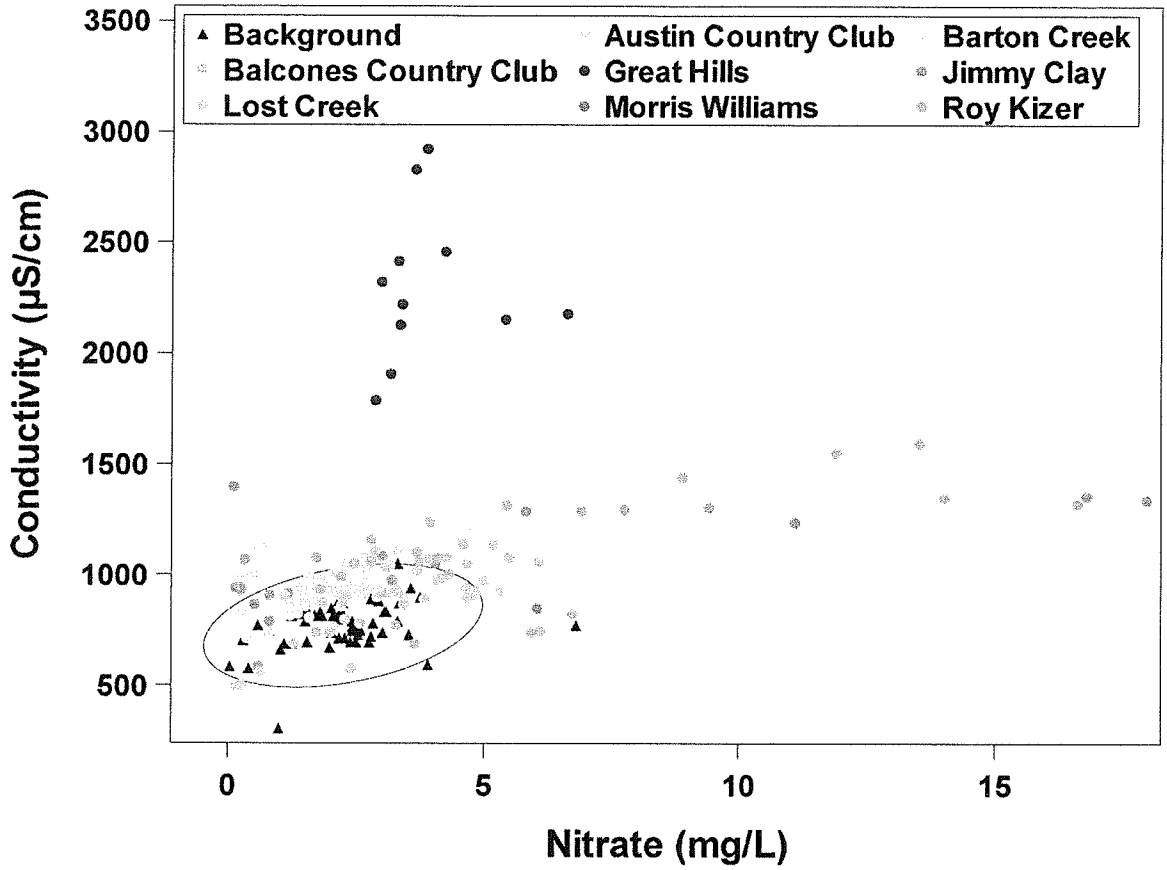


Figure 26: Conductivity versus nitrate in springs affected by golf courses. Background conditions for the purpose of this analysis are those at springs that do not include reclaimed water irrigation in the springshed, such as Avery Ranch. The ellipse shows the 95% interval for background conductivity versus nitrate. A majority of Roy Kizer, Jimmy Clay and Morris Williams values are outside the 95% background, suggesting that they are different from non-reclaim irrigated or upper gradient golf course springs.

Antecedent Rainfall

Rainfall data within the Tannehill watershed showed that all sample events were conducted under non-storm influenced conditions, although three of the four sampling events at Bartholomew Park followed fairly recently after rain events of more than 0.5 inches (Figure 27). Rainfall data within the Williamson watershed showed that the 15 October 2014 and 24 September 2015 sampling events followed rain events in which the total rainfall over the watershed was over 0.5 inches. There was little to no rain one month prior to the remaining sampling events at Clay/Kizer (Figure 28). The monthly irrigation volume at Clay/Kizer was highest for the 23 July 2015 and 27 August 2015 sampling events. Sample collection was attempted on 20 October 2015 for the Clay/Kizer sites, but Williamson Creek was not flowing at this time and no water column or benthic samples were collected.

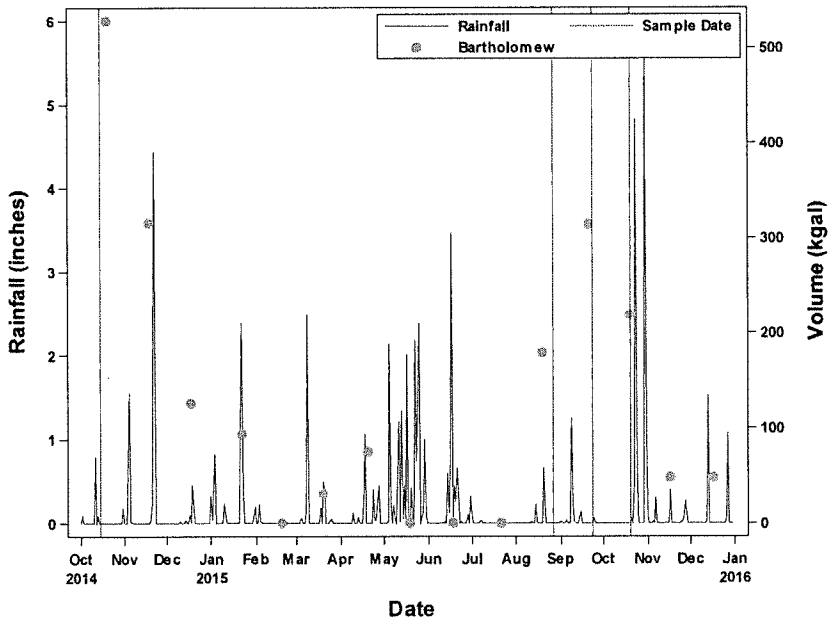


Figure 27: Rainfall (inches), Bartholomew Park irrigation volume (kgal) from October 2014 to December 2015. Dashed lines represent sampling events.

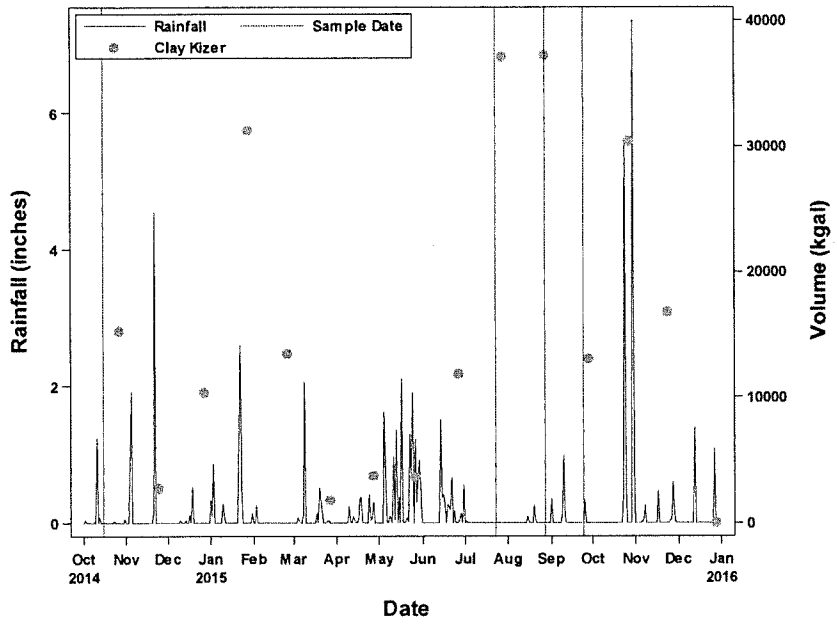


Figure 28: Rainfall (inches), Clay/Kizer irrigation volume (kgal) from October 2014 to December 2015. Dashed lines represent sampling events.

As Morris Williams Golf Course (Figure 29) also lies within the Tannehill watershed, rainfall and sampling patterns are similar to that of Bartholomew Park described previously. The monthly irrigation volume at Morris Williams was highest for the 27 August 2015 sampling event.

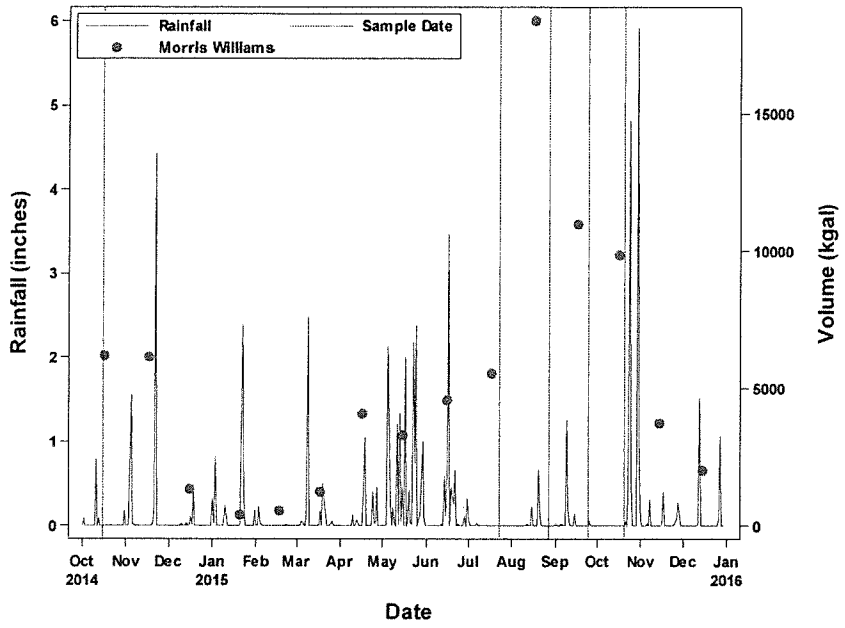


Figure 29: Rainfall (inches), Morris Williams irrigation volume (kgal) from October 2014 to December 2015. Dashed lines represent sampling events.

Nitrogen Isotopes

Lab analysis of the stable δ^{15}nitrogen and δ^{18} oxygen isotope ratios of nitrate collected during the October 25, 2014, sampling event revealed that all sites with sufficient nitrate for isotope analysis plotted in the biogenic range using common source fields by Kendall (1988). This suggests that the source of nitrogen was manure or wastewater (Figure 34). Similar isotopic comparisons have been used to identify potential wastewater effluent impacts to Austin area waterbodies by the United States Geological Survey (Mahler et al. 2011). There was no indication that the nitrogen in the study water bodies was originating from precipitation or fertilizer application. Both upstream and downstream sites on Waller Creek plotted in the biogenic range, possibly indicating leaking wastewater infrastructure upstream of the Hancock Golf Course.

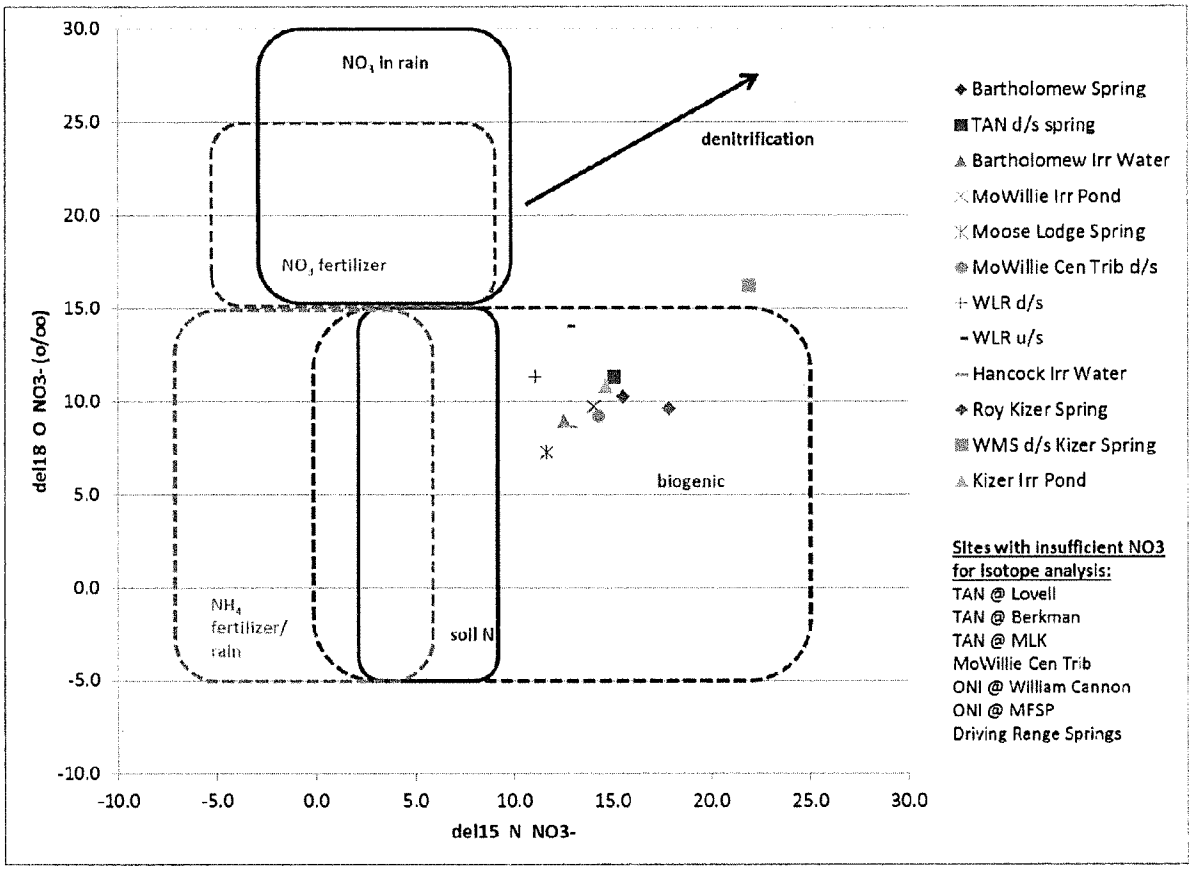


Figure 34: Nitrogen/Oxygen stable isotope ratio plot for study sites. Source boundaries adapted from Kendall (1998).

Conclusions

Using the conservation of mass, a conceptual model was established to determine whether there was a discernible impact from reclaimed water on adjacent surface water and groundwater resources. This model generated three hypotheses (see Methods section), which were tested against statistical intervals of data collected at each of three City of Austin facilities irrigating with reclaimed water. Furthermore, this conceptual model allowed for a more precise model, pHREEQc, which incorporated the interaction of geochemical processes into the model. The pHREEQc model provided predictions on the composition of downstream water given a certain mixture of upstream water and reclaimed water. This information was also used to verify the validity of the conceptual model and as an indication of the appropriateness of the hypothesis chosen. Finally, additional data was provided supporting the model and the conclusions presented below:

- Confidence intervals in surface water indicate that nitrate+nitrite and ions including sulfate, alkalinity, chloride, sodium, magnesium, potassium, and calcium are significantly higher in the downstream surface water samples at 2 of the 4 sites, Bartholomew and Roy Kizer (Figure 5, 9, and 11), but not significantly higher at Morris Williams mainstem and ambiguous for Morris Williams central tributary. Information from benthic nutrient ratios (discussed below) at Morris Williams central tributary removed this ambiguity.

- The benthic C:P confidence intervals exhibited a significant decrease from upstream to downstream sites indicating degradation downstream of reclaim water irrigation areas. While there was no significant difference in benthic C:N ratios from upstream to downstream, the probability of the benthic C:N ratios to be lower at downstream sites was high (0.89) and more samples would be necessary to validate indicate a significant decrease from upstream to downstream. In addition, benthic C:P and C:N ratios from only 2 of the 13 paired (upstream/downstream) samples were higher downstream than upstream (Figures 31 and 32). There was no significant difference in benthic chlorophyll *a* (mass per unit area) from upstream to downstream even though the nutrients for growth were more readily available to algae downstream of the irrigation. Thus, there was not a significant increase in biomass upstream to downstream observed in this study although confounding factors such as available sunlight (i.e., accounting for variable canopy cover at the study sites) were not evaluated in this analysis.

- The difference in benthic C:P and C:N ratios were most prominent in the mainstem of Tannehill Creek upstream and downstream of Morris Williams Golf Course. The differences in water column nutrients between the upstream and downstream locations at Morris Williams were the most ambiguous with this being the only paired location where there was not more nitrate+nitrite downstream of the irrigation.

- Piper plots of chemical facies indicate downstream waters generally trend from the upstream conditions toward the reclaimed water conditions indicating an influence of the reclaimed water on surface water resources (Figures 20, 21, and 23).

- The computer model, pHREEQc, estimated that about 40% of the downstream water at Bartholomew Park was from reclaimed water, validating the results from the confidence intervals at Bartholomew Park. The variability in the data at Roy Kizer could not reproduce a similarly precise estimate from pHREEQc of the reclaimed water contribution on the downstream section. Estimates of reclaimed water contribution on downstream sections of Morris Williams did not indicate an impact on the surface water, but benthic ratios show a clear uptake of the nutrients into the algal biomass.

- Samples from springs at the golf course study sites where reclaimed water is irrigated generally show higher conductivity than background conditions (Figures 24 and 26), consistent with previous local evaluations (Hiers and Herrington 2007). More specifically, conductivity collected at the spring adjacent to Roy Kizer is significantly higher than background conditions.

- Nitrate+nitrite concentrations at the spring impacted by Roy Kizer Golf Course are significantly higher than background concentrations, consistent with previous local evaluations (Hiers and Herrington 2007) and other U.S. Geological Survey studies (Pruitt et al. 1988, Katz et al. 2009). In fact, some of the highest nitrate+nitrite concentrations ever observed by the City of Austin in springs were collected at the Roy Kizer Golf Course. Of the 2,693 nitrate+nitrite samples collected from springs, the 10 highest values are all from Jimmy Clay and Roy Kizer, one of which was recently collected at Roy Kizer (Figures 22 and 25).

- Nitrogen and oxygen isotopes of nitrate for all sites with sufficient nitrate for analysis indicated that nitrogen is originating from biogenic (manure or wastewater) sources (Figure 34) during the October 2014 sampling event. Nitrogen in Waller Creek upstream of Hancock Golf Course also yielded a biogenic signature.

Based on these findings, the hypothesis that there is an impact (Hypothesis 2) to the receiving stream either on the surface water or the benthic algal stoichiometry that is likely attributable to the irrigation of reclaimed water is validated. Irrigation of reclaimed water appears to be inadvertently degrading the quality of adjacent surface water and groundwater resources based on the weight of evidence evaluated in this study.

Recommendations

1. Reclaimed water irrigation should not occur adjacent to waterways to avoid unintended adverse water quality impacts. A protective setback distance to avoid adverse impacts has not yet been quantitatively determined by the City of Austin Watershed Protection Department. The Critical Water Quality Zone (City of Austin Land Development Code Chapter 25-8-92), Erosion Hazard Zone (City of Austin Land Development Code Chapter 27-7-2, Drainage Criteria Manual Appendix E) and/or the City of Austin fully-developed floodplain boundaries should be considered as protective buffers in which no reclaimed water irrigation should occur, consistent with existing City of Austin policies and land development regulations to limit anthropogenic disturbance in these areas.

2. If irrigation of reclaimed water cannot be adjusted on a specific site so that it does not occur within the Critical Water Quality Zone and/or City of Austin fully-developed floodplain (e.g., potentially due to the width of these zones relative to the total size of a specific parcel), then site-specific characteristics (e.g., soils, geology, topography, vegetation) should be evaluated on a case-by-case basis to determine appropriate protective setbacks.

3. If it is determined that current irrigation of reclaimed water on public parks adjacent to waterways is unavoidable, then measures should be implemented over time to minimize adverse impacts to surface water. Mitigation measures may include, but are not limited to, revised riparian vegetation management practices that maximize nutrient uptake, sprinkler head adjustments, and additional monitoring to identify potential adjustments to irrigation rates or schedule while meeting turf grass needs. That additional monitoring could also improve the statistical intervals developed in this report.

4. Additional sampling as described in the Methods section of this report is recommended to increase the resolution of benthic C:N ratios upstream and downstream of irrigation sites to more conclusively determine if impacts are present for this parameter.

5. Benthic chlorophyll *a* concentrations (mass per unit area) were too variable to discern an upstream to downstream statistical pattern. Additional explanatory variables like canopy cover need to be accounted for when using benthic chlorophyll *a* as a measure of degradation in similar scenarios.

Discussion

Reclaimed water is a priority demand-side water conservation strategy for the City of Austin, as recognized in the Austin Water Resource Planning Task Force Report to City Council (July 2014, austintexas.gov/page/austin-water-resource-planning-task-force). Reclaimed water use not only reduces the discharge of treated effluent to the Colorado River, but also reduces the withdrawal of high quality raw water from Lake Austin and Lake Travis. The Austin Water Utility has 74 active metered reclaimed water customers, four bulk fill stations, and more than 50 miles of reclaimed water distribution pipelines already installed. Reuse of City of Austin reclaimed water constitutes approximately 3% of total wastewater volume treated. For site plan applications submitted on or after May 1, 2015, the City of Austin mandates connection of new commercial development to the reclaimed water distribution system

if the development is within 250 ft of a reclaimed water main. Thus, applying restrictions on current or future reclaimed water irrigation should be carefully considered.

This report proposes restrictions on reclaimed water irrigation within the floodplain, CWQZ or EHZ (see Recommendations). Planning staff within the City of Austin Watershed Protection Department conducted four geographic information system (GIS) analyses of the potential implications of the Recommendations of this report on existing, planned, and new potential reclaimed water customers. These analyses utilized Travis County Appraisal District (TCAD) parcel boundaries within the actual Austin Water Utility water service area (water pressure zone). Parcel boundaries were intersected with City of Austin fully-developed floodplain (floodplain), Critical Water Quality Zone (CWQZ) and Erosion Hazard Zone (EHZ) boundaries.

Scenario 1, all parcels within Austin Water Utility actual water service area

This scenario assessed the percent area of 207,433 individual TCAD parcels in the actual Austin Water water service area within the floodplain, CWQZ and EHZ on an individual parcel basis. Of the 207,433 parcels assessed, there were 175,501 parcels (84.6% of total) with no area either within the floodplain, CWQZ, or EHZ. Approximately 99.19% of parcels have less than 3% of the area within the parcel boundaries falling within the floodplain, CWQZ or EHZ. Less than 0.02% of parcels are estimated to have 75% or more of the total parcel area falling within the floodplain, CWQZ or EHZ. Thus, on a citywide basis the restrictions on reclaimed water irrigation proposed in the Recommendations section of this report would have a minimal impact future reclaimed water use (Table 5).

Table 5. Analysis of the most restrictive (maximum) impact of limitation on reclaimed water irrigation on all parcels within the Austin Water Utility actual water service area.

Maximum Percent of Parcel Affected (Bin)	# of Parcels within the Bin	% of Total Number of Parcels within the Bin
0	175,501	84.61
less than 1%	28,500	13.74
1%-2%	1,205	0.58
2%-3%	539	0.26
3-4%	377	0.18
4-5%	243	0.12
5-6%	170	0.08
6-7%	128	0.06
7-8%	89	0.04
8-9%	96	0.05
9-10%	73	0.04
10-25%	343	0.17
25-50%	100	0.05
50-75%	26	0.01
75-100%	43	0.02

Scenario 2, potential new reclaimed water customer impact

This scenario assessed the potential impact of the restrictions on reclaimed water irrigation proposed in the Recommendations section of this report on potential new reclaimed water customers as identified by Austin Water in February 2015. The maximum pervious area of the 31 TCAD parcels within the floodplain, CWQZ or EHZ was assessed. Two of the 31 potential new customer parcels had no pervious

area (as defined by City of Austin Environmental Criteria Manual) within the parcel boundaries. The majority (96.7%) of identified potential new customers had less than 2% of their pervious areas falling within the floodplain, CWQZ or EHZ. The maximum impact was 5.4% of the pervious area, occurring on one parcel (Table 6).

Table 6. Analysis of most restrictive (maximum) impact of limitation on reclaimed water irrigation on the pervious area of parcels identified as potential new reclaimed water customers (as of February 2015).

Maximum Percent of Pervious Area Within Parcel Affected (Bin)	# of Parcels within Bin	% of Total # of Parcels
No Pervious Area	2	6.45
No impact	18	58.06
Less than 1%	8	25.81
1-2%	2	6.45
5-6%	1	3.23

Scenario 3, potential impact to existing reclaimed water customers

This scenario intersected TCAD parcel boundaries for 45 existing Austin Water reclaimed water customers (as identified in February 2015) with the floodplain, CWQZ and EHZ boundaries. The majority of existing reclaimed water customer parcels (64.4%) had no pervious area within the floodplain, CWQZ or EHZ. Only 11.1% of existing customer parcels had 50% of their total pervious area within the floodplain, CWQZ or EHZ.

Table 7. Analysis of most restrictive (maximum) impact of limitation on reclaimed water irrigation on the pervious area of parcels for existing reclaimed water customers (as of February 2015).

Maximum Percent of Pervious Area with Parcel Affected (Bin)	# of Parcels within Bin	% of Total # of Parcels
No impact	29	64.44
Less than 10%	2	4.44
10-20%	4	8.89
20-30%	1	2.22
30-40%	2	4.44
40-50%	2	4.44
50-60%	1	2.22
60-70%	0	0.00
70-80%	2	4.44
80-90%	0	0.00
90-100%	2	4.44

Scenario 4, parcels within 100 ft of a current or proposed reclaimed water main

This scenario identified parcels within the Austin Water actual water service area located within 100 ft of a current or proposed reclaimed water distribution main. The pervious (irrigable) area for these 6,940 parcels also falling within the floodplain, CWQZ or EHZ was assessed. The majority of parcels (81%) within 100 ft of an existing or reclaimed water distribution main had all of their pervious area falling within the floodplain, CWQZ or EHZ. Approximately 6.2% of parcels had no pervious area outside of the floodplain, CWQZ or EHZ. Approximately 10.6% of parcels within 100 ft of an existing or planned

reclaimed water distribution main would not be able to irrigate reclaimed water on 50% or more of their pervious area as a result of restrictions proposed in the Recommendations section (Table 8).

Table 8. Analysis of most restrictive (maximum) impact of limitation on reclaimed water irrigation on the pervious area of parcels within 100 ft of an existing or planned reclaimed water distribution main.

Maximum % of Pervious Area within Parcel Affected (Bin)	# of Parcels within Bin	% of Total # of Parcels
0%	5624	81.04
less than 1%	48	0.69
1-10%	129	1.86
10-20%	118	1.70
20-30%	104	1.50
30-40%	97	1.40
40-50%	80	1.15
50-60%	80	1.15
60-70%	74	1.07
70-80%	78	1.12
80-90%	73	1.05
90-100%	435	6.27

Acknowledgements

This initial sampling event was completed with the assistance of multiple City of Austin Parks and Recreation Department staff that facilitated access to the park and golf course study locations. Additionally, Dan Pedersen with Austin Water provided background information on the use of reclaimed water at these locations, and provided reclaimed water sampling information. The City of Austin Watershed Protection Department expresses sincere appreciation to these individuals for their valuable assistance with this project.

References

Biggs, BJF. 1985. Algae: a blooming nuisance in rivers. Soil and Water, **21**: pp 27–31.

Biggs, BJF, and GM Price. 1987. A survey of filamentous algal proliferations in New Zealand rivers. New Zealand Journal of Marine Freshwater Research, **21**: pp 175–191.

Biggs, BJF, and HA Thomsen. 1995. Disturbance in stream periphyton by perturbations in shear stress: time to structural failure and differences in community resistance. Journal of Phycology, **31**: pp. 233–241.

Bowman, MF, PA Chambers, and DW Schindler. 2005. Changes in stoichiometric constraints on epilithon and benthic macroinvertebrates in response to slight nutrient enrichment of mountain rivers. Freshwater Biology, **50**(11): pp. 1836-1852.

City of Austin (COA). 2005. Preliminary Report on Storm Water Runoff from Effluent-Irrigated Golf Courses. CM-05-04. Prepared by the Environmental Resource Management Division, City of Austin Watershed Protection Department.

Clamann, A, and S Hiers, A Richter, M Scoggins, C Herrington. 2014. Reclaimed water irrigation water quality impact assessment, Phase 1 Summary of Results. City of Austin Watershed Protection Department. DR-15-03. 17 p.

Droop, MR. 1974. The nutrient status of algal cells in continuous culture. Journal of the Marine Biological Association of the United Kingdom, **54**(4): pp. 825-855.

Frost, PC, and JJ Elser. 2002. Effects of light and nutrients on the net accumulation and elemental composition of epilithon in boreal lakes. Freshwater Biology, **47**: pp. 173–183.

Gelman, A, and J Hill. 2007. Data Analysis Using Regression and Multilevel/Hierarchical Models. Cambridge University Press. New York, NY.

Hiers, S, and C Herrington, 2007. Differences in groundwater quality at springs influenced by effluent irrigation of golf courses in Austin, Texas, City of Austin – Watershed Protection Department, SR-07-12, 14 p.

Hillebrand, H, and M Kahlert. 2001. Effect of grazing and nutrient supply on periphyton biomass and nutrient stoichiometry in habitats of different productivity. Limnology and Oceanography, **46**: pp. 1881–1898.

Hillebrand, H, and M Kahlert. 2002. Effect of grazing and water column nutrient supply on biomass and nutrient content of sediment microalgae. Aquatic Botany, **72**: pp. 143–159.

Katz, BG, and DW Griffin, HD Davis. 2009. Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: Chemical and microbiological indicators. Science of the Total Environment 407: 2872-2886.

Kendall, C. 1998. Tracing nitrogen sources and cycling in catchments. *IN* Isotope Tracers in Catchment Hydrology. Edited by C. Kendall and J.J. McDonnell. Elsevier Science B.V., Amsterdam.

Mahler, BJ, and M. Musgrove, C Herrington, TL Sample. 2011. Recent (2008–10) concentrations and isotopic compositions of nitrate and concentrations of wastewater compounds in the Barton Springs zone, south-central Texas, and their potential relation to urban development in the contributing zone: U.S. Geological Survey Scientific Investigations Report 2011–5018, 39 p.

Peterson, CG, and RJ Stevenson. 1989. Substratum conditioning and diatom colonization in different current regimes. Journal of Phycology, **25**: pp. 790–793.
1990. Post-

Pollick, HF. 2004. Water fluoridation and the environment: current perspective in the United States. International journal of occupational and environmental health 10(3): 343-350.

Pruitt, JB, and JF Elder, IK Johnson. 1988. Effects of treated municipal effluent irrigation on ground water beneath sprayfields, Tallahassee, Florida. U.S. Geological Survey Water-Resources Investigations Report 88-4092. 35 pp.

Quinn, JM, and BW Gilliland. 1989. The Manawatu River cleanup—has it worked? Transactions of the Institution of Professional Engineers, New Zealand, **16**: pp 22–26.

Quinn, JM, and CW Hickey. 1990. Magnitude of effects of substrate particle size, recent flooding and catchment development on benthic invertebrate communities in 88 New Zealand rivers. New Zealand Journal of Marine and Freshwater Research, **24**: pp 411–427.

Rhee, G. 1973. A continuous culture study of phosphate uptake, growth rate and polyphosphate in *Scenedesmus* sp. Journal of Phycology, **9**(4): pp. 495-506.

Stelzer, RS, and GA Lamberti. 2001. Effects of N:P ratio and total nutrient concentration on stream periphyton community structure, biomass, and elemental composition. Limnology and Oceanography, **46**: pp. 356–367.

Stevenson, RJ. 1983. Effects of current and conditions simulating autogenically changing microhabitats on benthic diatom immigration. Ecology, **64**: pp. 1514–1524.

Texas Commission on Environmental Quality (TCEQ). 2006. Nutrient criteria development plan: Texas Commission on Environmental Quality, draft report to U.S. Environmental Protection Agency, pp 33.

Welch, EB, JM Jacoby, RR Horner, and MR Seeley. 1988. Nuisance biomass levels of periphyton algae in streams. Hydrobiologia, **157**: pp 161–168.

Wharfe, JR, KS Taylor, and HAC Montgomery. 1984. The growth of *Cladophora glomerata* in a river receiving sewage effluent. Water Research, **18**: pp 971–979.

WRE SOP. 2013. City of Austin Water Resource Evaluation Section Standard Operating Procedures Manual. Section 5.4 Diatom Sampling.

Appendix A Paired Differences

Table A.1: Confidence Intervals of the Mean Paired Differences in Concentrations (mg/L, unless otherwise noted) between Downstream and Upstream Samples in Bartholomew Park

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
DISSOLVED OXYGEN	-5.6	-1.6	2.0
pH (standard units)	-0.35	-0.10	0.15
Ammonia	-0.14	0.02	0.18
Nitrate	1.04	1.76	2.45
TKN	-0.19	0.11	0.39
Total Nitrogen	1.20	1.84	2.48
Orthophosphorus	-0.032	0.009	0.046
Phosphorus	-0.023	0.023	0.069
Alkalinity	96.2	106.9	117.8
Chloride	16.5	41.0	63.5
Sodium	12.9	29.9	45.7
Magnesium	3.0	5.0	6.8
Calcium	32.4	55.0	74.2
Potassium	0.3	1.2	2.1
Sulfate	5.8	30.5	57.5
Fluoride	-0.04	0.00	0.04
Strontium	0.09	0.19	0.27

Table A.2: Confidence Intervals of the Mean Paired Differences in Concentrations (mg/L, unless otherwise noted) between Downstream and Upstream Samples in Morris Williams (main stem)

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
DISSOLVED OXYGEN	-4.9	-1.4	1.9
pH (standard units)	-0.34	-0.13	0.09
Ammonia	-0.06	0.08	0.25
Nitrate	-1.02	-0.39	0.27
TKN	0.11	0.39	0.66
Total Nitrogen	0.32	0.95	1.58
Orthophosphorus	-0.028	0.010	0.043
Phosphorus	-0.017	0.025	0.067
Alkalinity	-68.7	-59.0	-49.3
Chloride	-9.0	11.1	33.8
Sodium	-7.3	7.0	22.7
Magnesium	-1.5	0.2	1.9
Calcium	-43.8	-26.3	-5.3
Potassium	-0.2	0.6	1.4
Sulfate	-14.4	11.5	36.3
Fluoride	-0.05	-0.01	0.03
Strontium	-0.16	-0.09	-0.01

Table A.3: Confidence Intervals of the Mean Paired Differences in Concentrations (mg/L, unless otherwise noted) between Downstream and Upstream Samples in Morris Williams (central tributary)

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
DISSOLVED OXYGEN	-2.0	1.6	5.1
pH (standard units)	0.47	0.67	0.86
Ammonia	-0.19	-0.02	0.12
Nitrate	0.16	0.79	1.45
TKN	-0.21	0.07	0.34
Total Nitrogen	-0.50	0.80	2.10
Orthophosphorus	-0.008	0.026	0.069
Phosphorus	-0.004	0.035	0.084
Alkalinity	1.6	11.2	21.0
Chloride	-1.6	18.6	39.2
Sodium	-3.9	10.2	25.1
Magnesium	-1.4	0.2	2.0
Calcium	-1.3	17.0	35.0
Potassium	-1.0	-0.2	0.7
Sulfate	0.7	24.2	47.1
Fluoride	-0.02	0.02	0.05
Strontium	-0.02	0.05	0.13

Table A.4: Confidence Intervals of the Mean Paired Differences in Concentrations (mg/L, unless otherwise noted) between Downstream and Upstream Samples in Roy Kizer

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
DISSOLVED OXYGEN	-4.8	-1.3	2.1
pH (standard units)	-0.64	-0.43	-0.20
Ammonia	-0.17	0.01	0.18
Nitrate	2.33	3.20	4.00
TKN	0.00	0.31	0.65
Total Nitrogen	-0.78	3.62	8.02
Orthophosphorus	-0.044	0.005	0.043
Phosphorus	-0.053	0.011	0.056
Alkalinity	28.0	40.0	52.2
Chloride	18.5	48.9	74.4
Sodium	15.9	37.2	55.3
Magnesium	3.3	5.6	7.7
Calcium	11.6	36.3	58.8
Potassium	2.7	3.9	5.0
Sulfate	11.0	40.0	72.6
Fluoride	-0.01	0.03	0.08
Strontium	-0.09	0.00	0.10

Appendix B Confidence Intervals of the Mean

Table B.1: Confidence Intervals of the Mean in Concentrations (mg/L) at Bartholomew Park

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
Upstream			
Orthophosphorus	<DL	<DL	<DL
Phosphorus	<DL	0.02	0.14
Nitrate	<DL	0.09	3.56
TKN	0.056	0.53	0.99
Alkalinity	69.64	102.4	134.6
Chloride	<DL	16.02	34.64
Sodium	<DL	12.56	27.11
Magnesium	<DL	3.56	7.99
Calcium	25.50	44.46	63.56
Potassium	1.50	2.426	3.36
Sulfate	<DL	16.44	33.28
Fluoride	0.14	0.37	0.59
Downstream			
Orthophosphorus	<DL	.01	.02
Phosphorus	<DL	0.04	0.26
Nitrate	<DL	1.32	3.65
TKN	0.15	0.51	0.87
Alkalinity	195.4	224.9	251.7
Chloride	52.70	63.11	73.18
Sodium	38.29	48.29	58.09
Magnesium	6.05	8.98	11.86
Calcium	86.22	101.00	115.00
Potassium	3.38	3.95	4.51
Sulfate	46.42	56.18	65.61
Fluoride	0.21	0.36	0.52
Reclaimed Water			
Orthophosphorus	4.22	4.56	4.90
Phosphorus	4.53	4.69	4.84
Nitrate	25.6	28.6	31.5
TKN	0.3	0.7	1.2
Alkalinity	<DL	27.7	62.2
Chloride	107.5	120.5	132.7
Sodium	114.9	127.6	139.4
Magnesium	30.5	34.1	37.6
Calcium	32.8	50.4	67.9
Potassium	14.1	14.8	15.5
Sulfate	173.0	185.1	196.4
Fluoride	1.9	2.1	2.3

Table B.2: Confidence Intervals of the Mean in Concentrations (mg/L) at Morris Williams (main stem)

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
Upstream			
Orthophosphorus	<DL	<DL	<DL
Phosphorus	<DL	<DL	0.03
Nitrate	<DL	0.71	2.87
TKN	<DL	0.26	0.62
Alkalinity	217.8	245.6	271.1
Chloride	25.59	34.99	44.56
Sodium	16.09	25.22	34.52
Magnesium	3.11	5.80	8.51
Calcium	97.00	110.70	123.50
Potassium	1.30	1.83	2.36
Sulfate	29.08	38.15	46.98
Fluoride	0.21	0.34	0.48
Downstream			
Orthophosphorus	<DL	0.01	0.03
Phosphorus	<DL	0.05	0.17
Nitrate	<DL	0.34	2.75
TKN	0.251	0.60	0.96
Alkalinity	138.40	161.80	184.10
Chloride	25.22	38.41	51.37
Sodium	16.71	27.10	37.42
Magnesium	2.35	5.40	8.50
Calcium	61.38	75.18	88.54
Potassium	1.742	2.392	3.055
Sulfate	26.26	38.19	50.01
Fluoride	0.15	0.31	0.47
Reclaimed Water			
Orthophosphorus	4.22	4.56	4.90
Phosphorus	4.53	4.69	4.84
Nitrate	25.6	28.6	31.5
TKN	0.3	0.7	1.2
Alkalinity	<DL	27.6	55.8
Chloride	107.5	120.5	132.7
Sodium	114.9	127.6	139.4
Magnesium	30.5	34.1	37.6
Calcium	32.8	50.4	67.9
Potassium	14.1	14.8	15.5
Sulfate	173.0	185.1	196.4
Fluoride	1.9	2.1	2.3

Table B.3: Confidence Intervals of the Mean in Concentrations (mg/L) at Morris Williams (central tributary)

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
Upstream			
Orthophosphorus	<DL	<DL	<DL
Phosphorus	<DL	0.02	0.04
Nitrate	4.55	5.73	6.95
TKN	7.16	7.32	7.48
Alkalinity	<DL	1.07	2.31
Chloride	0.17	0.30	0.44
Sodium	129	216	291
Magnesium	6.13	30.44	52.21
Calcium	11.05	25.31	38.80
Potassium	2.68	4.98	7.27
Sulfate	38.29	96.77	145.30
Fluoride	1.50	2.45	3.39
Downstream			
Orthophosphorus	<DL	0.05	0.15
Phosphorus	<DL	0.07	0.19
Nitrate	0.53	1.76	3.00
TKN	0.19	0.32	0.45
Alkalinity	135	223	297
Chloride	18.82	43.03	65.90
Sodium	17.57	32.22	46.09
Magnesium	2.83	5.08	7.34
Calcium	49.63	111.10	160.70
Potassium	1.34	2.28	3.19
Sulfate	16.99	48.96	79.44
Fluoride	0.34	0.39	0.45
Reclaimed Water			
Orthophosphorus	4.22	4.56	4.90
Phosphorus	4.53	4.69	4.84
Nitrate	25.6	28.6	31.5
TKN	0.3	0.7	1.2
Alkalinity	<DL	27.6	55.8
Chloride	107.5	120.5	132.7
Sodium	114.9	127.6	139.4
Magnesium	30.5	34.1	37.6
Calcium	32.8	50.4	67.9
Potassium	14.1	14.8	15.5
Sulfate	173.0	185.1	196.4
Fluoride	1.9	2.1	2.3

Table B.4: Confidence Intervals of the Mean in Concentrations (mg/L) at Roy Kizer

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
Upstream			
Orthophosphorus	<DL	0.01	0.02
Phosphorus	<DL	0.02	0.04
Nitrate	<DL	1.11	5.45
TKN	<DL	0.19	0.77
Alkalinity	161.7	207.1	247.8
Chloride	5.36	39.09	75.13
Sodium	1.54	24.39	49.62
Magnesium	4.63	8.59	12.68
Calcium	64.91	94.38	120.20
Potassium	0.38	1.96	3.67
Sulfate	15.05	49.23	79.48
Fluoride	0.11	0.31	0.53
Downstream			
Orthophosphorus	<DL	<DL	0.03
Phosphorus	<DL	0.02	0.05
Nitrate	<DL	3.50	7.13
TKN	0.01	0.46	0.93
Alkalinity	198.8	238.8	274.5
Chloride	46.44	78.99	107.20
Sodium	33.82	54.55	73.82
Magnesium	9.43	12.81	16.32
Calcium	93.12	121.30	143.70
Potassium	4.17	5.62	7.07
Sulfate	46.77	80.44	108.50
Fluoride	0.16	0.34	0.53
Reclaimed Water			
Orthophosphorus	0.26	1.59	2.92
Phosphorus	1.32	1.81	2.29
Nitrate	9.23	13.26	16.73
TKN	0.79	1.32	1.77
Alkalinity	63.2	102.1	138.3
Chloride	59.23	97.33	124.90
Sodium	60.82	85.62	104.40
Magnesium	20.84	24.59	27.95
Calcium	19.40	42.66	67.07
Potassium	13.72	15.20	16.61
Sulfate	32.15	61.11	87.58
Fluoride	0.98	1.17	1.35

Appendix C

Benthic algae carbon to phosphorus (C:P) ratios, carbon to nitrogen (C:N) ratios, and benthic algae chlorophyll *a* collected upstream and downstream of each reclaim irrigation site.

Date	Site	Benthic C:P Ratio		Benthic C:N Ratio		Benthic chlorophyll *a* (mg/m^2)	
		Upstream	Downstream	Upstream	Downstream	Upstream	Downstream
15-OCT-14	Bartholomew	11.13	10.45	2.15	1.59	35.81	57.32
	Clay/Kizer: Onion	17.66	6.08	2.56	2.17	14.30	8.40
	Clay/Kizer: Williamson	26.27	9.78	8.30	1.91	9.30	41.90
	Hancock	7.95	9.79	1.35	1.80	26.47	65.82
	Morris Williams	15.34	7.76	2.29	1.87	80.40	90.02
23-JUL-15	Clay/Kizer: Williamson	14.18	11.48	1.49	0.85	136.31	104.46
	Morris Williams	23.08	11.93	1.68	1.66	25.34	54.78
27-AUG-15	Bartholomew	10.11	12.02	1.79	1.53	72.61	105.02
	Clay/Kizer: Williamson	14.85	16.21	2.48	1.73	57.04	47.98
	Morris Williams	21.11	16.23	2.10	1.79	167.02	98.37
24-SEP-15	Bartholomew	17.50	10.91	1.40	1.85	31.99	78.70
	Clay/Kizer: Williamson	15.23	13.46	0.50	0.65	109.41	112.95
	Morris Williams	19.39	4.65	0.73	0.46	93.70	54.78
20-OCT-15	Bartholomew	18.18	8.15	1.81	1.57	30.29	223.64
	Morris Williams	21.77	11.99	1.96	1.77	57.75	52.94

Appendix D

Differences between total nitrogen in the water column, benthic C:P, benthic C:N, and benthic chlorophyll *a* for each sampling event were analyzed (Figures D1-D4). C:P ratios and C:N ratios are thought to be lower in streams where nutrients are available for uptake at high concentrations, which can result in low water column concentrations of nutrients because the periphyton has acquired the nutrients.

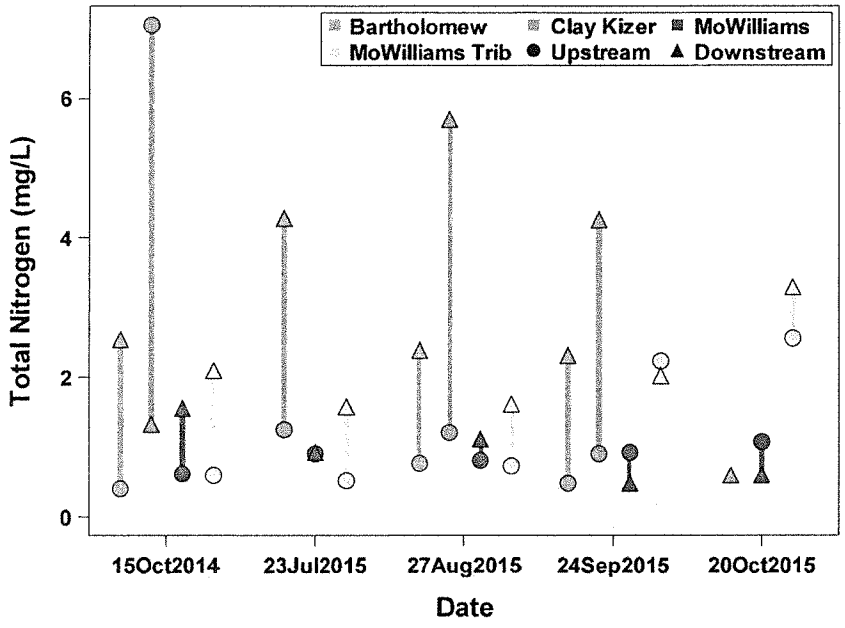


Figure D.1: Upstream and downstream total nitrogen (mg/L) collected from Bartholomew Park, Roy Kizer, and Morris Williams surface water beginning in October 2014 to December 2015.

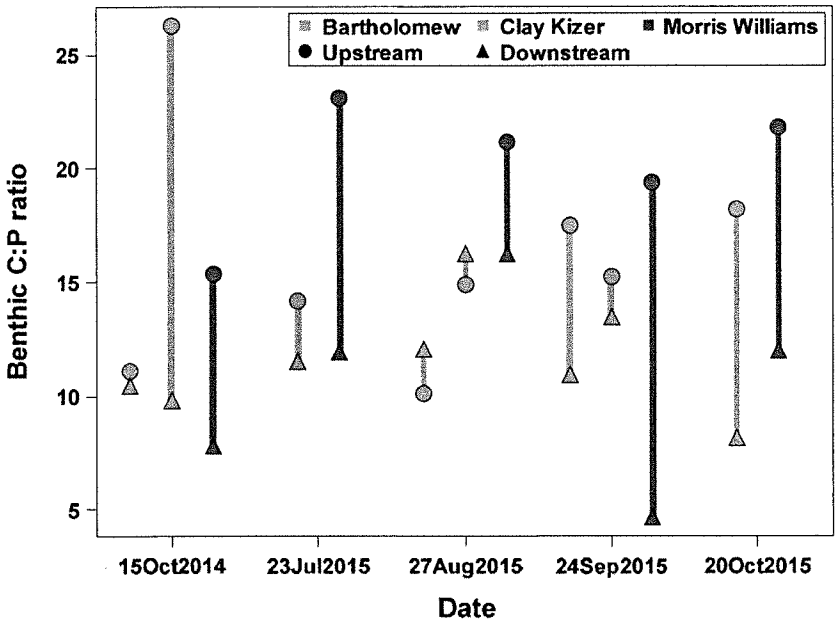


Figure D.2: Upstream and downstream benthic C:P collected from Bartholomew Park, Roy Kizer, and Morris Williams beginning in October 2014 to December 2015.

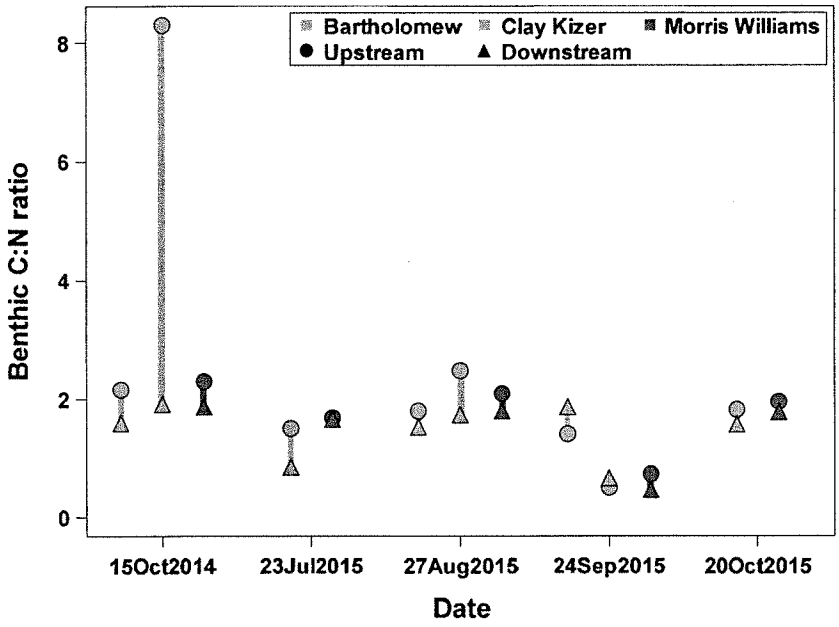


Figure D.3: Upstream and downstream benthic C:N collected from Bartholomew Park, Roy Kizer, and Morris Williams beginning in October 2014 to December 2015.

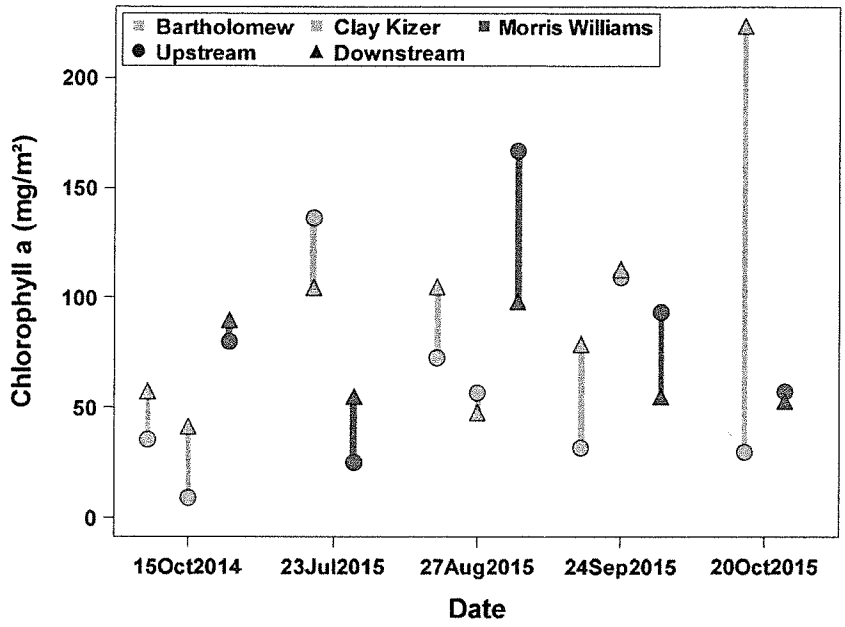


Figure D.4: Upstream and downstream benthic chlorophyll *a* (mg/m^2) collected from Bartholomew Park, Roy Kizer, and Morris Williams beginning in October 2014 to December 2015.

City of Austin
WATERSHED PROTECTION

Comparison of water quality at locations currently receiving wastewater effluent irrigation to locations planned for future wastewater effluent irrigation

DR-18-01, October 2017

Aaron Richter and Scott Hiers, P.G.

City of Austin
Watershed Protection Department
Environmental Resource Management Division

Abstract

The dominant form of wastewater disposal in the environmentally sensitive Barton Springs Zone of the Edwards Aquifer is to apply treated wastewater effluent over an irrigation field rather than to allow the effluent to be directly discharged to a stream. A Texas Land Application Permit (TLAP) is required from the Texas Commission on Environmental Quality (TCEQ) in order to dispose of 5,000 gallons per day or more of treated wastewater over an irrigation field. However, the current permitting criteria may not be enough to keep the wastewater from negatively impacting adjacent streams. The City of Austin Watershed Protection Department conducted monitoring to determine how irrigation practices from TLAP facilities may influence water quality in downgradient water resources. Samples were collected during non-storm influenced conditions at springs or downgradient stream sites adjacent to two existing TLAP facilities and two proposed facilities that have not yet begun effluent irrigation in Travis County, Texas. Results indicated that chloride, nitrate/nitrite, sodium, and strontium isotopes were elevated at both sites impacted by existing TLAP facilities. Water quality downgradient of one of the TLAP facilities also contained elevated concentrations of calcium, potassium, alkalinity, and conductivity. The drainage network to the second TLAP facility is large and complex. Non-effluent waters may be diluting some water quality parameters and it is unlikely that WPD staff can make useful inferences about the protective nature of this TLAP. Thus, the site will be dropped from the second phase of this monitoring effort.

INTRODUCTION

The Texas Commission on Environmental Quality (TCEQ) issues permits for treated wastewater effluent disposal of 5,000 gallons per day or more via no discharge irrigation through the Texas Land Application Permit (TLAP) program under Title 30 of the Texas Administrative Code chapters 222 and 309. TLAP facilities are the dominant method of centralized wastewater disposal in the Barton Springs Zone (Herrington et al. 2011). Permit requirements for storage, treatment limits, and irrigation areas in the contributing zone of the Edwards Aquifer are highly variable (Ross 2011). TLAP facilities may have unintended negative impacts on the nutrient concentrations of adjacent streams and springs (Mahler et al. 2011; Turner 2010). Effluent irrigation via similar methods under a TCEQ Beneficial Reuse Authorization (Title 30 Texas Administrative Code Chapter 210) has been documented to impact adjacent water quality (Porras et al. 2016). Data highlighting the impacts of TLAP facilities on the high quality surface and groundwater resources of the Barton Springs Zone are extremely limited (Ross 2011). Revisions to the Texas Administrative Code may be necessary to achieve TLAP requirements with consistent limitations that are protective of water quality. This report will quantify potential impact of TLAP facilities on adjacent water resources through the characterization of resources adjacent to separate currently operating TLAP facilities and two resources adjacent to facilities that are not yet operating.

METHODS

Site Description

Springs or downgradient stream sites adjacent to permitted TLAP facilities which have not yet begun effluent irrigation include Rimrock Spring, North Sycamore Creek at Foster Ranch Road, and Little Barton upstream of Hamilton Pool Road. Rimrock Spring and North Sycamore Creek at Foster Ranch Road are adjacent to Travis County Municipal Utility District (MUD) No. 4 (WQ0014430001) (Figure 1). The proposed facility consists of an activated sludge process plant, includes one storage pond with a total capacity of 140 acre-feet of storage, and is authorized to dispose of treated domestic wastewater effluent at a daily average flow not to exceed 600,000 gallons per day through surface irrigation over 220 acres in the final phase of the permit (application rate of 3.0 acre-feet per year per acre). The permit requires an ultraviolet (UV) light system for the disinfection process and contains effluent limitations for 5-day carbonaceous biochemical oxygen demand (CBOD5), total suspended solids, and ammonia.

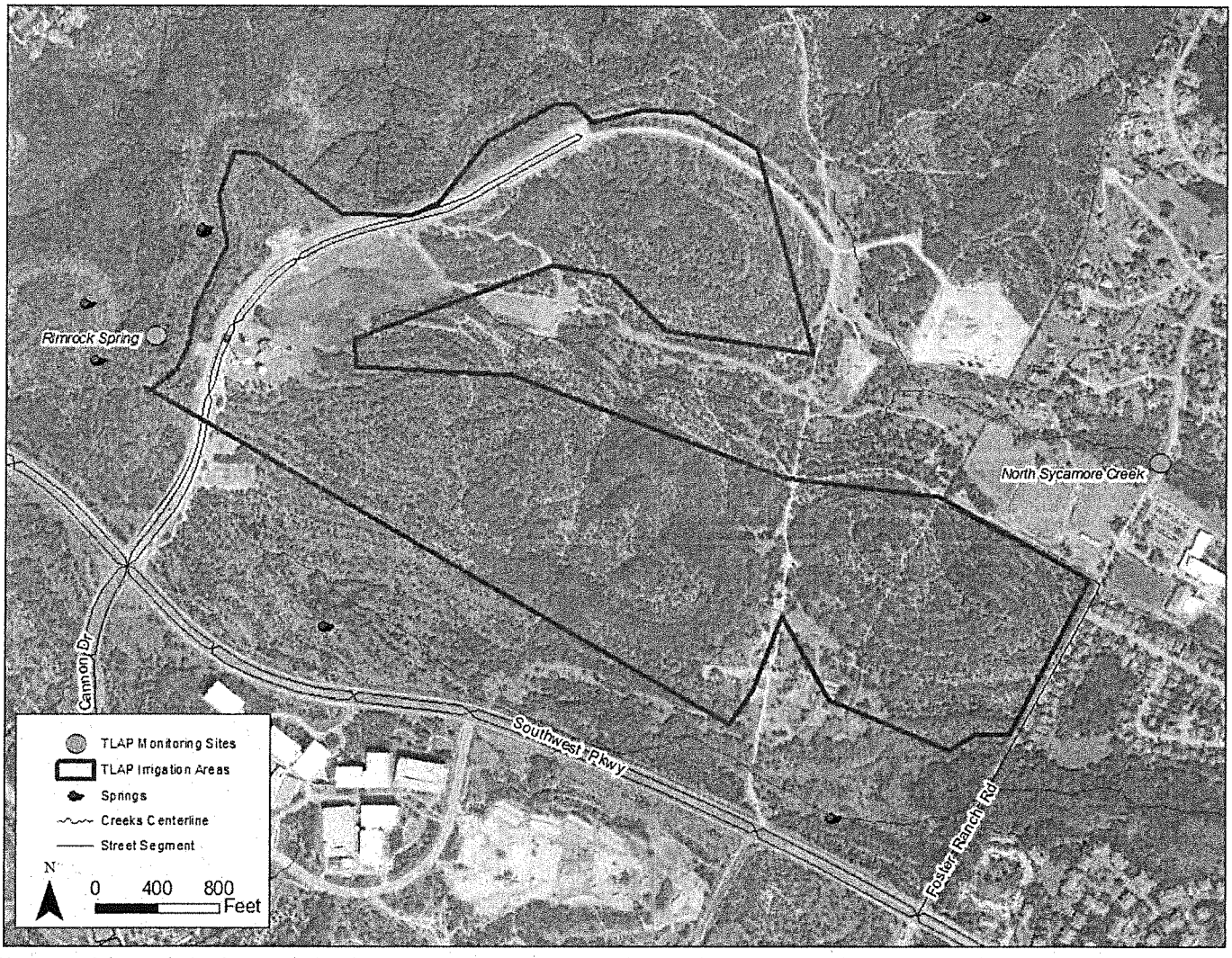


Figure 1. Rimrock Spring and North Sycamore at Foster Ranch sample sites at the future TLAP field Travis County Municipal Utility District (MUD) No. 4.

The sample site Little Barton Creek Upstream of Hamilton Pool (Figure 2) is adjacent to Lazy Nine MUD 1A and Sweetwater Austin Properties LLC (hereafter referred to as Lazy Nine) (WQ0014629001) in the Little Barton Creek Watershed. The proposed facility consists of an activated sludge process plant, includes two storage ponds with a total capacity of 90.3 acre-feet of storage in the final phase, and is authorized to dispose of treated domestic wastewater effluent at a daily average flow not to exceed 490,000 gallons per day through surface irrigation over 199.5 acres in the

final phase of the permit (application rate of 2.75 acre-feet per year per acre). The permit allows for the use of a chlorine contact chamber for the disinfection process and contains effluent limitations for CBOD5 and total suspended solids.

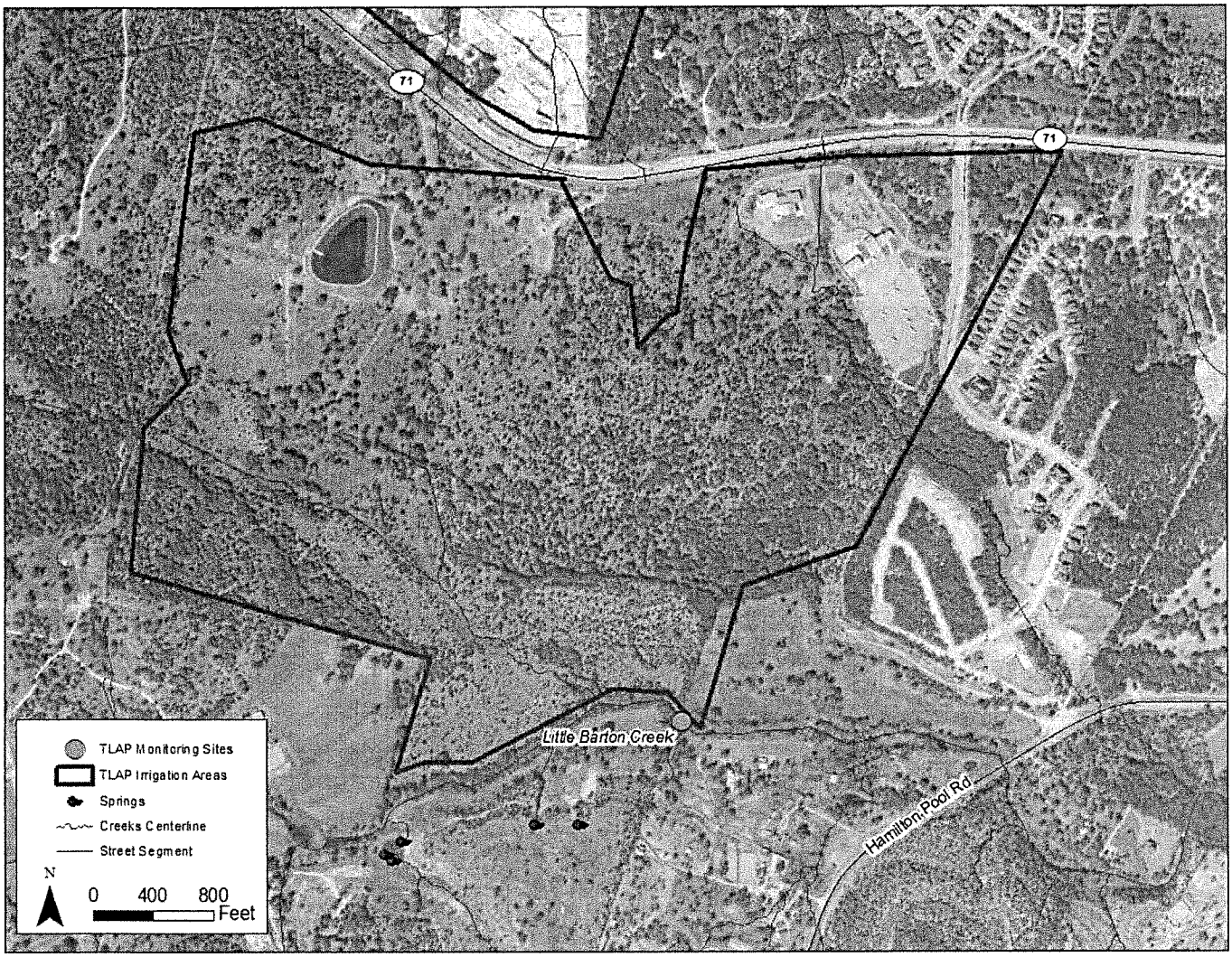


Figure 2. Little Barton Creek Upstream of Hamilton Pool sample site at Lazy Nine MUD 1A and Sweetwater Austin Properties LLC.

Springs or downgradient stream sites adjacent to permitted TLAP facilities which are currently irrigating with wastewater effluent include Short Spring Branch at Barton Creek and Barton Scenic Bluff Spring. The sample site Short Spring Branch at Barton Creek is adjacent to the Lost Creek Wastewater Treatment Facility (Figure 3) and is located on Short Spring Branch, a tributary to Barton Creek. The permit (WQ0011319001) was first issued to the Lost Creek MUD but was transferred to the City of Austin in 2009. The facility consists of one contact stabilization activated sludge plant and one complete mix activated sludge plant which are operated in parallel, includes three storage ponds with a total capacity of 69.2 acre-feet of storage in the final phase, and is authorized to dispose of treated domestic wastewater effluent at a daily average flow not to exceed 520,000 gallons per day through surface irrigation over 308.42 acres (102 acres of the Lost Creek Golf Course, 20 acres of the adjacent 38 acre tract of land, and 186.42 acres of the Coore-Crenshaw Golf Course) in the final phase of the permit. The facility is also authorized to transfer 220,000 gallons per day to Travis County MUD No. 4 (WQ0013206001). The application rate of the irrigated land is not to exceed 2.75 acre-feet per year per acre, but if the full 308.42 acres is used for irrigation of the 520,000 gallons per day of effluent, the application rate would be closer to 1.89 acre-feet per year per acre. The permit requires a chlorine contact chamber for the disinfection process and contains effluent limitations for CBOD5 and total suspended solids.

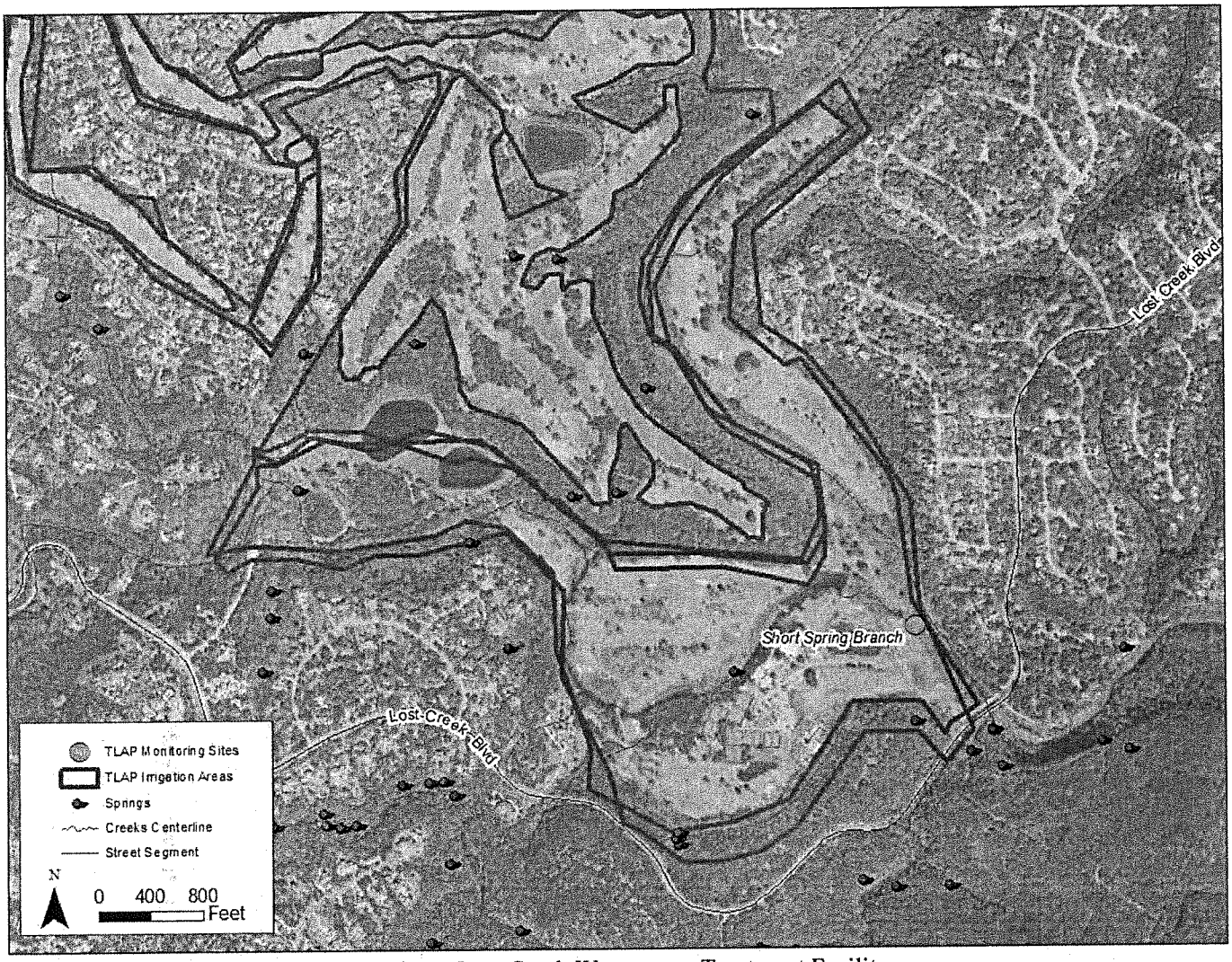


Figure 3. Short Spring Branch sample site at Lost Creek Wastewater Treatment Facility.

The sample site Barton Scenic Bluff Spring is adjacent to Barton Creek West (WQ0012786001) (Figure 4) in the Barton Creek watershed. The facility consists of a contact stabilization activated sludge process plant, includes one storage pond with a total capacity of 62.7 acre-feet of storage, and is authorized to dispose of treated domestic wastewater effluent at a daily average flow not to exceed 126,000 gallons per day through surface irrigation over 53.3 acres (application rate of 2.65 acre-feet per year per acre). The permit requires a chlorine contact chamber for the disinfection process and contains effluent limitations for CBOD5 and total suspended solids.

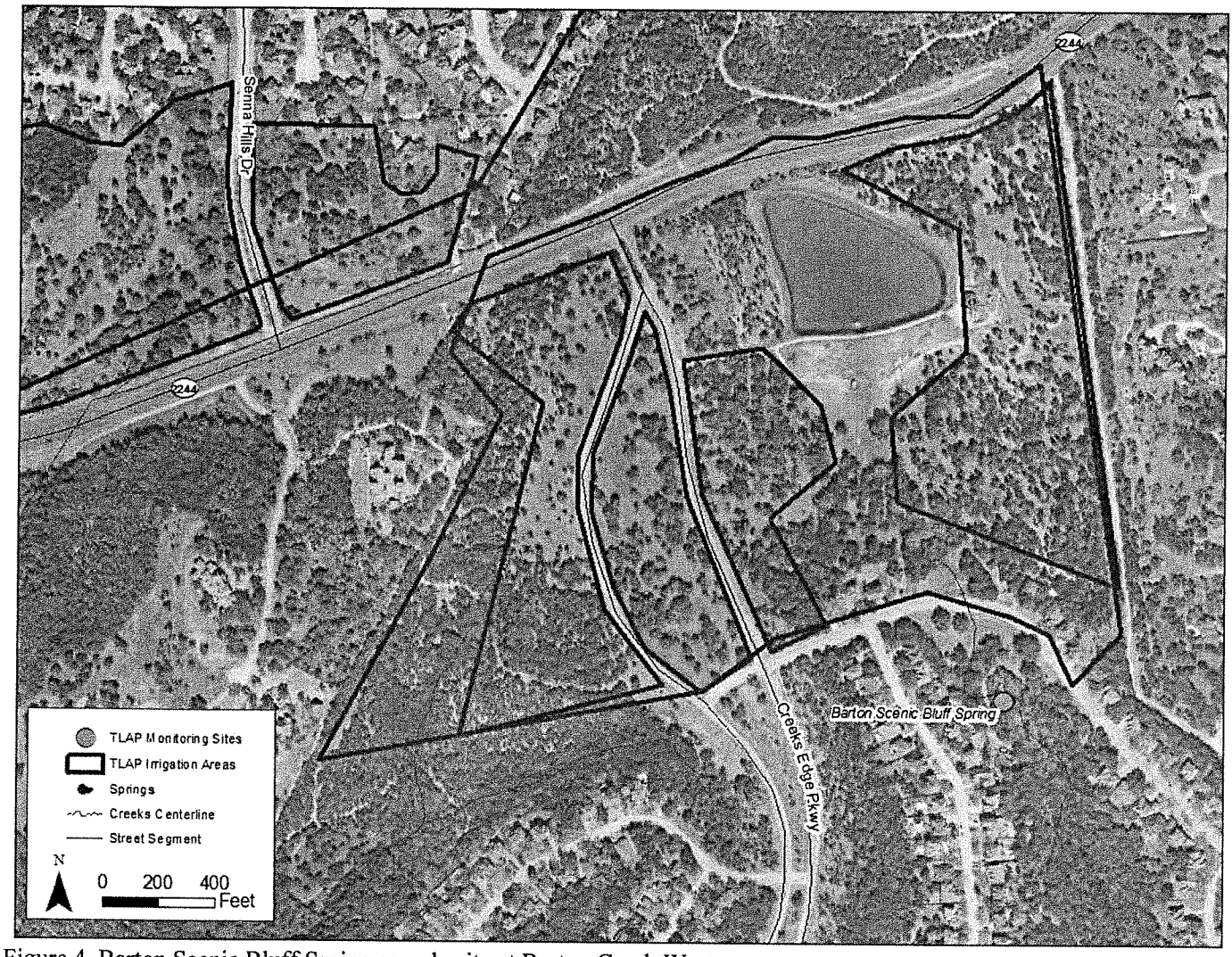


Figure 4. Barton Scenic Bluff Spring sample site at Barton Creek West.

Data Collection

Data collection was originally scheduled to begin in July 2012, and continue once per month for two years or until the Lazy Nine and Travis County MUD No. 4 began actively using their irrigation fields. Adherence to this schedule led to a large number of sampling events in which flow was not present. In response, a more flexible schedule was adopted so that sample events could be scheduled when sites were flowing (Table 1). Sample events occurred under baseflow conditions pursuant to the Watershed Protection Department Standard Operating Procedures which limited the influence of antecedent rainfall.

Table 1: Schedule of water quality sample collection at each site.

DATE	Existing operating TLAP		Future proposed TLAP		
	Barton Scenic Bluff Spring	Short Spring Branch	Little Barton Creek	Rimrock Spring	North Sycamore Creek
28-AUG-2012	X	X	X		
09-APR-2013	X	X	X	X	
24-OCT-2013	X	X	X	X	X
20-NOV-2013				X	X
22-JUL-2014	X			X	X
20-OCT-2014					X
21-OCT-2014	X	X	X		
04-DEC-2014	X	X	X		X
21-JAN-2015	X	X	X	X	X
17-FEB-2015					X
18-FEB-2015	X	X	X	X	
30-MAR-2015					X
31-MAR-2015	X	X	X	X	
29-APR-2015	X	X	X	X	X
28-JUL-2015	X	X	X	X	X
20-AUG-2015	X	X	X	X	X
02-DEC-2015	X	X	X	X	X
06-JAN-2016	X	X	X	X	X
03-FEB-2016	X	X	X	X	X
17-FEB-2016	X	X	X	X	X
25-APR-2016				X	X
09-JUN-2016				X	X
12-DEC-2016	X	X	X	X	X

Water samples were sent to Lower Colorado River Authority (LCRA) Environmental Lab Services for analysis of a suite of source water characterization parameters (Table 2). Strontium isotope analysis was sub-contracted to the Massachusetts Institute of Technology (MIT) Isotope Lab in the Department of Earth, Atmospheric and Planetary Sciences, while the nitrogen and oxygen isotope analysis was sub-contracted to Isotech Laboratories. Water samples were collected following the procedures outlined in the Water Resource Evaluation Standard Operating Procedures Manual (WRE SOP 2016). Samples used for analysis of dissolved metals were filtered in the field using a 0.45 μm filter.

Table 2: Suite of parameters collected every sampling event.

Dissolved Metals	Total Metals	Ions	Nutrients	Isotopes	Field	Other
Aluminum	Arsenic	Chloride	Ammonia as N	Strontium 86/87 Ratio	Conductivity	Alkalinity
Barium	Boron	Bromide	Nitrate/Nitrite as N	Nitrogen-15	Dissolved Oxygen	*Escherichia coli* (*E. coli*)
Calcium	Magnesium	Fluoride	Kjeldahl Nitrogen as N	Oxygen-18	pH	Organic Carbon
Copper	Potassium	Sulfate	Orthophosphorus as P		Water Temperature	Total Suspended Solids
Iron	Sodium		Phosphorus as P			Volatile Suspended Solids
Lead	Strontium					
Zinc						

Analytical Methods

Nitrogen-15 and Oxygen-18 isotopes were collected at all sites; however, samples containing less than 1 mg/L of nitrate/nitrite contain insufficient concentrations to carry out isotope analysis. Thus, samples collected at Barton Scenic Bluff Spring, which contained nitrate/nitrite concentration greater than 1 mg/L, were analyzed for N-15 and O-18 isotopes. Accordingly, due to the low number of results, these two isotopes will not be explored in this analysis.

Parameters were split into three categories *post hoc* based on the percentage of values below the detection limit at each site. The first category consisted of parameters which had a high percentage of values below the detection limit, the second contained parameters with an intermediate percentage of values below the detection limit, and the third contained parameters where no values were below the detection limit. Parameters were considered to have a high percentage of values below the detection limit if over 50% of the samples were below the detection limit at the majority of sites or if the percentage of values below the detection limit was greater than 70% at one site. When greater than 50% of the values are below the detection limit and the data set contains a small number of observations, such as this data set, calculating the mean can become difficult leading to biased estimates. In fact, this parameter set contained sites with over 70% of values below the detection limit and no method is recommended for computing a mean under such conditions. Parameters were considered to contain an intermediate percentage of values below the detection limit if they contained one value below the detection limit to approximately 50% of values below the detection limit at each site. Nitrate/nitrite as N was the only parameter in this category to have more than 50% of values below the detection limit at Rimrock Spring and North Sycamore Creek with 54% and 57% respectively.

A test of equal proportions was performed on parameters with a higher percentage of values below the detection limit (Hollander and Wolfe 1999). This was done using the CHISQ option in the TABLES statement using PROC FREQ in SAS version 9.4. This procedure computes a chi-square statistic based on the frequency of values below the detection limit at each site compared to the expected frequency if each site were assumed to have an equal proportion of values below the detection limit. If the chi-square statistic is large enough than the proportion of values below the detection limit is different between sites.

Estimates of the mean along with the 95% confidence intervals of the mean were computed for a parameter at a site if less than 50% of the values for that parameter were below the detection limit. Estimates were computed for nitrate/nitrite as N for all sites even though the percentage of points below the detection limit were above 50% at Rimrock Spring and North Sycamore Creek, thus the nitrate/nitrite as N estimates may be high at these sites. Several recommendations exist for computing means with values below the detection limit including maximum likelihood estimation (MLE), the Kaplan-Meier method, and robust Regression on Order Statistics (ROS). MLE computes a mean and a standard deviation based on a likelihood equation for values above the detection limit and below the detection limit but requires a data set with greater than 50 detected values (Helsel and Cohn 1988, Singh and Nocerino 2002, Shumway et al. 2002). The Kaplan-Meier method is a nonparametric method initially used for survival analysis where unknown values were greater than a threshold but has been adopted to work with data where the unknown value is less than a threshold. The Kaplan-Meier method estimates the cumulative distribution function associated with the data where the mean equals the area underneath this curve (Klein and Moeschberger 2003). The downside of the Kaplan-Meier method is that when only one detection limit is present in the data then the method is equivalent to simple substitution of the detection threshold. For the robust ROS method, detected values are put into a probability plot and a linear regression line is calculated from those points. The linear equation is used to impute the values below detection. These imputed values are combined with the real data values above the detection limit to calculate summary statistics (Helsel 2012). The mean and 95% confidence intervals were computed using the simple substitution method and the robust ROS method; however, values imputed through the robust ROS method were continuously above the detection limit for every parameter except *E. coli*. This lead to slightly higher estimates of the mean when compared to using the simple substitution method. Thus the mean and 95% confidence intervals reported in this document are based off of the simple substitution method using the threshold of detection as the filled in value for all parameters except *E. coli* where the robust ROS method was used to find the estimates.

The experimental design fits a hierarchical model system because the samples are clustered within sites which are then clustered into whether or not the site is downgradient of a currently operating TLAP irrigation field. The intraclass correlation coefficient is a statistic that is used to quantify the degree to which observations within a cluster resemble each other (Koch 1982). If used in a linear mixed model the intraclass correlation can give you the proportion of the total

variance in the response variable which is accounted for by the clustering. Given the following equation for a mixed model:

$$Y_{ij} = mu + u_i + \varepsilon_{ij}$$

where Y_{ij} is the j observation of the response variable in i^{th} cluster, mu is an overall mean, u_i is a random effect shared by all values in the i^{th} cluster, and ε_{ij} is unaccounted for error. Then the intraclass correlation can be computed as

$$\frac{\sigma_u^2}{\sigma_u^2 + \sigma_\varepsilon^2}$$

where σ_u^2 is the variance of u and σ_ε^2 is the variance of ε. The intraclass correlation coefficient was computed when only the clustering effect of being downgradient of an operating TLAP irrigation field was considered as a random effect and again when the clustering effect of site location was introduced into the model.

Concentrations were compared between sites for group of parameters with an intermediate percentage of values below the detection limit and the group of parameters where none of the values were below the detection limit. For the former, concentrations were compared using the Kruskal Wallis test and the Dwass, Steel, Critchlow-Fligner multiple comparison method (Hollander and Wolfe 1999). This was done using the WILCOXON and DSCF options in the NPAR1WAY procedure in SAS version 9.4. For the latter, concentrations were compared using an Analysis of Variance (ANOVA) test and the Tukey-Kramer multiple comparison method (Kutner et al. 2005).

RESULTS

Parameters in Table 3 had a high percentage of samples below the detection limit at each site. It is difficult to develop descriptive statistics about parameters when over 50% of the data is below the detection limit. Means were computed only at appropriate sites for copper, boron, and total suspended solids (Table 4) but no comparison of the mean was done for these parameters. Instead, the proportion of samples below the detection limit was compared between sites. Copper had a significantly lower proportion of samples below the detection limit at Barton Scenic Bluff Spring. Boron had a significantly higher proportion of samples below the detection limit at Rimrock Spring and North Sycamore Creek, and the proportion of samples collected at Barton Scenic Bluff Spring was significantly lower than at Little Barton Creek. Total phosphorus had a significantly lower proportion of samples below the detection limit at Short Spring Branch when compared to Barton Scenic Bluff Spring and North Sycamore Creek. Total Suspended Solids had a significantly higher proportion of sample below the detection limit when compared to Short Spring Branch and North Sycamore Creek. Volatile Suspended Solids had a significantly lower proportion of samples below the detection limit in North Sycamore Creek when compared to Barton Scenic Bluff Spring, Short Spring Branch, and Little Barton Creek (Table 3).

Parameters in Table 5 had an intermediate proportion of samples under the detection limit. Site means were computed and site comparisons were done using nonparametric methods. While the percentage of samples below detection limit for nitrate/nitrite was slightly higher than 50% at Rimrock Spring and North Sycamore Creek, the mean was still computed at these sites to compare against the other sites which had very few samples below the detection limit for nitrate/nitrite (Table 5).

Concentrations of bromide were significantly higher at Barton Scenic Bluff Spring when compared to Little Barton Creek and Rimrock Spring, which contained concentrations of bromide that were significantly lower than at any other site (Table 7). These results complement the intraclass correlation analysis because there are significant bromide concentration differences from site to site but the two sites impacted by active TLAPs are different from the three sites not impacted by active TLAPs. Chloride concentrations were significantly highest at Barton Scenic Bluff Spring but concentrations at Short Spring Branch were significantly higher than the other three sites and concentrations at Little Barton Creek were significantly higher than at Rimrock Spring or North Sycamore Creek. Sites impacted by active TLAPs had the highest concentrations of chloride which is why the intraclass correlation for chloride was substantial even when the site location was included. Fluoride was significantly highest at Rimrock Spring followed by Little Barton Creek. Nitrate/nitrite was significantly highest at Barton Scenic Bluff Spring but was not significantly different at other sites. Concentrations at Short Spring Branch were elevated but not significantly different from the non-TLAP impacted sites. This corresponds to the intraclass correlation suggesting that the nitrate/nitrite concentrations may be impacted

more by the presence of a TLAP and less on the site location. Total Kjeldal Nitrogen at Little Barton Creek was significantly lower than at all other sites. Organic carbon concentrations were highest at Short Spring Branch and North Sycamore Creek but lowest at Little Barton Creek. *E. coli* counts were highest at Little Barton Creek and North Sycamore Creek but were low at Rimrock Spring.

The intraclass correlation for the intermediately censored parameters when only the TLAP function was included in the model showed that 0 to 48% of the variance could be explained by whether or not an active TLAP drained to the site location (Table 6). However, when site location was included in the model, all of the TLAP function intraclass correlations except for nitrate/nitrite and chloride dropped to 0% and the site location explained 16 to 53% of the variance. Nitrate/nitrite and chloride showed the highest indication that an active TLAP was impacting the concentrations found in the samples since the variance explained by TLAP function ranged from 35 to 38% after site location was included (Table 6).

Parameters in Table 8 contained only those parameters that were always above the detection limit. No special analyses were needed to compute means or compare site mean concentrations. The intraclass correlation for the uncensored parameters when only the TLAP function was included in the model showed that 0 to 68% of the variance could be explained by whether or not an active TLAP drained to the site location (Table 9). However, when site location was included in the model, all of the TLAP function intraclass correlations except for calcium, potassium, sodium, conductivity, water temperature, and strontium 86/87 ratio dropped to 0% and the site location explained 0 to 77% of the variance.

Table 3: Number of total samples, samples under the detection limit, and percentage of samples under the detection limit for each of the 5 sites receiving drainage from the 4 TLAP irrigation areas. Barton Creek West and Lost Creek TLAPs were functioning during the sampling period while the Lazy Nine and Travis County MUD No. 4 were yet to be irrigated. Parameters were highly censored (50-90% below detection). Site percentages marked with a different letter (A, B, C) were significantly different for that parameter.

Parameter	Detection Limit	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
		Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
		Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent
Aluminum	1.5 µg/L	15	11	73	16	12	75	15	11	73	13	10	77	7	4	57
Copper	0.4 µg/L	15	6	40^{A}	16	14	88^{B}	15	14	93^{B}	13	12	92^{B}	7	7	100^{B}
Iron	0.02 mg/L	15	15	100	16	16	100	15	15	100	13	13	100	7	7	100
Lead	0.4 µg/L	15	15	100	16	16	100	15	15	100	13	13	100	7	7	100
Zinc	1.5 µg/L	15	13	87	16	14	88	15	15	100	13	11	85	7	7	100
Arsenic	0.7 µg/L	15	15	100	16	14	88	15	15	100	13	13	100	7	7	100
Boron	0.02 mg/L	15	0	0^{A}	16	1	6^{AB}	15	4	27^{B}	13	11	85^{C}	7	5	71^{C}
Ammonia as N	0.008 mg/L	15	14	93	16	12	75	15	14	93	13	9	69	7	6	86
Orthophosphorus	0.004 mg/L	14	14	100	16	15	94	15	15	100	13	13	100	7	7	100
Total Phosphorus	0.008 mg/L	15	15	100^{B}	16	11	69^{A}	15	13	87^{AB}	13	12	92^{AB}	7	7	100^{B}
Total Suspended Solids	1 or 2 mg/L	15	11	73^{B}	16	5	31^{A}	15	6	40^{AB}	12	6	50^{AB}	7	1	14^{A}
Volatile Suspended Solids	1 or 2 mg/L	15	15	100^{B}	16	15	94^{B}	15	15	100^{B}	12	10	83^{AB}	7	4	57^{A}

Table 4: Means and 95% confidence interval for highly censored parameters where the site percentage of data below detection limit was 50% or less.

Parameter	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
	Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
	Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval	
Copper (µg/L)	1.08	0.89	1.32												
Boron (mg/L)	0.247	0.197	0.309	0.099	0.080	0.123	0.060	0.048	0.075						
Total Suspended Solids (mg/L)				1.36	1.06	1.76	1.87	1.44	2.43	2.34	1.74	3.13	4.31	2.94	6.33

Table 5: Number of total samples, samples under the detection limit, and percentage of samples under the detection limit for each of the 5 sites receiving drainage from the 4 TLAP irrigation areas. Barton Creek West and Lost Creek TLAPs were functioning during the sampling period while the Lazy Nine and Travis County MUD No. 4 were yet to be irrigated. Parameters were intermediately censored (1-50% below detection limit).

Parameter	Detection Limit	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
		Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
		Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent
Bromide	0.008 mg/L	14	1	7	16	1	6	15	1	7	13	2	15	7	0	0
Chloride	0.4 mg/L	14	0	0	16	0	0	15	1	7	13	0	0	7	0	0
Fluoride	0.02 mg/L	13	1	8	15	0	0	14	0	0	12	0	0	7	0	0
Nitrate/Nitrite as N	0.008 mg/L	15	0	0	16	0	0	15	3	20	13	7	54	7	4	57
Total Kjeldahl Nitrogen	0.080 mg/L	15	3	20	16	0	0	15	5	33	13	4	31	7	0	0
Organic Carbon	0.2 mg/L	15	0	0	16	0	0	15	0	0	13	1	8	7	0	0
E. coli	1 MPN/100 mL	15	5	33	16	0	0	15	1	7	12	3	25	7	1	14

Table 6: Intraclass correlation for intermediately censored parameters (1-50% below detection limit) for a model that includes only a TLAP function cluster and a model which contains cluster effects of TLAP function and site location.

Parameter	ICC TLAP Function only	ICC TLAP function and Site Location	
		TLAP Function	Site Location
Bromide	0.25	0	0.52
Chloride	0.48	0.35	0.47
Fluoride	0.26	0	0.53
Nitrate/Nitrite as N	0.42	0.38	0.16
Total Kjeldahl Nitrogen	0.07	0	0.23
Organic Carbon	0	0	0.34
E. coli	0.05	0	0.40

Table 7: Means and 95% confidence interval for intermediately censored parameters. Site means marked with a different letter (A, B, C, D) were significantly different for that parameter.

Parameter	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
	Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
	Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval	
Bromide (mg/L)	0.204^{C}	0.177	0.230	0.158^{BC}	0.133	0.183	0.131^{B}	0.106	0.157	0.038^{A}	0.010	0.065	0.168^{BC}	0.131	0.205
Chloride (mg/L)	112.2^{D}	103.6	120.9	46.3^{C}	38.2	54.4	29.5^{B}	21.1	37.9	14.9^{A}	5.9	23.9	12.9^{A}	0.7	25.2
Fluoride (mg/L)	0.114^{A}	0.096	0.135	0.143^{A}	0.122	0.168	0.211^{B}	0.179	0.249	0.403^{C}	0.337	0.482	0.139^{A}	0.110	0.176
Nitrate/Nitrite as N (mg/L)	1.762^{B}	1.014	3.061	0.365^{A}	0.214	0.624	0.143^{A}	0.082	0.249	0.152^{A}	0.084	0.275	0.106^{A}	0.047	0.239
Total Kjeldahl Nitrogen (mg/L)	0.253^{B}	0.186	0.344	0.319^{B}	0.237	0.429	0.107^{A}	0.079	0.145	0.265^{B}	0.191	0.369	0.318^{B}	0.203	0.498
Organic Carbon (mg/L)	1.97^{B}	1.64	2.37	3.00^{C}	2.51	3.59	1.36^{A}	1.13	1.64	2.91^{BC}	2.40	3.55	3.86^{C}	2.95	5.05
E. coli (MPN/100mL)	47^{AB}	43	50	34^{A}	31	37	190^{B}	183	197	18^{A}	16	21	269^{B}	257	282

Table 8: Number of total samples, samples under the detection limit, and percentage of samples under the detection limit for each of the 5 sites receiving drainage from the 4 TLAP irrigation areas. Barton Creek West and Lost Creek TLAPs were functioning during the sampling period while the Lazy Nine and Travis County MUD No. 4 were yet to be irrigated. Parameters were uncensored (0% below detection limit).

Parameter	Detection Limit	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
		Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
		Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent
Barium	0.4 µg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Calcium	0.07 mg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Magnesium	0.07 mg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Potassium	0.07 mg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Sodium	0.07 mg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Strontium	0.4 µg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Sulfate	0.4 mg/L	14	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Alkalinity	20 mg/L	14	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Conductivity		15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Dissolved Oxygen		14	0	0	15	0	0	14	0	0	12	0	0	7	0	0
pH		15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Water Temperature		15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Strontium 86/87		13	0	0	14	0	0	13	0	0	11	0	0	6	0	0

Table 9: Intraclass correlation for uncensored parameters for a model that includes only a TLAP function cluster and a model which contains cluster effects of TLAP function and site location.

Parameter	ICC TLAP Function only	ICC TLAP function and Site Location	
		TLAP Function	Site Location
Barium	0	0	0.67
Calcium	0.34	0.1	0.72
Magnesium	0.08	0	0.65
Potassium	0.41	0.26	0.43
Sodium	0.56	0.41	0.5
Strontium	0.4	0	0.77
Sulfate	0.05	0	0.55
Alkalinity	0.01	0	0.57
Conductivity	0.27	0.08	0.61
Dissolved Oxygen	0	0	0.51
pH	0.25	0	0.81
Water Temperature	0.09	0.08	0
Strontium 86/87	0.68	0.47	0.48

Concentrations of barium at Little Barton Creek and Barton Scenic Bluff Spring were significantly higher than at other locations with no difference between the other three locations (Table 10). Calcium concentrations were different between site locations with Barton Scenic Bluff Spring samples containing the highest concentrations followed by Short Spring Branch and Little Barton Creek, then North Sycamore Creek, and finally Rimrock Spring. This corresponds well to the intraclass correlation which showed site location to explain a large amount of variation in calcium data. While both sites impacted by active TLAPs have higher concentrations of calcium, Little Barton Creek also contains calcium concentrations close to Short Spring Branch concentrations so the variance explained by the presence of TLAP impacts is relatively low. Magnesium was also site dependent with Rimrock Spring containing the highest concentrations and Short Spring Branch the lowest concentrations. Potassium concentrations were highest at Barton Scenic Bluff Spring and lowest at Little Barton Creek and North Sycamore Creek. The trend in potassium concentrations is similar to the trend for calcium except that Rimrock Spring contains higher concentrations of potassium instead of Little Barton Creek which contains higher concentrations of calcium. Sodium concentrations at Barton Scenic Bluff Spring were significantly higher than at other sites followed by Short Spring Branch. The intraclass correlation for sodium was high for both the presence of an active TLAP and the site location because the active TLAP locations contained high concentrations but were not similar to each other. Strontium concentrations at Rimrock Spring were significantly higher than at other sites followed by Little Barton Creek. Sulfate concentrations were significantly lowest at Sycamore Creek. Alkalinity at Barton Scenic Bluff Spring was significantly higher than at other sites. Conductivity at Barton Scenic Bluff Spring was significantly higher than at other sites while conductivity at North Sycamore Creek was significantly lower than at other sites. Dissolved Oxygen was significantly lower at Barton Scenic Bluff Spring and Rimrock Spring. The pH at Barton Scenic Bluff Spring was almost neutral and significantly lower than at the other sites while the pH at North Sycamore Creek was more basic and significantly higher than at other sites. Water temperature was significantly higher at Barton Scenic Bluff Spring when compared to Rimrock Spring which is why the intraclass correlation showed some variance explained by the presence of an active TLAP for water temperature. The strontium 86/87 ratio was significantly highest at Barton Scenic Bluff Spring followed by Short Spring Branch, the two Travis County MUD sites, and was lowest at Little Barton Creek. The intraclass correlation was high for the presence of an active TLAP in both models for strontium 86/87 because the values at both sites downgradient of active TLAPs were significantly higher than at the three sites not yet impacted by TLAP irrigation.

Table 10: Means and 95% confidence interval for uncensored parameters. Site means marked with a different letter (A, B, C, D) were significantly different for that parameter.

Parameter	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
	Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
	Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval	
Barium (µg/L)	47.8^{B}	44.2	51.7	33.3^{A}	30.9	35.9	54.3^{B}	50.2	58.7	33.4^{A}	30.7	36.3	30.2^{A}	26.9	33.8
Calcium (mg/L)	127.9^{D}	123.7	132.0	91.8^{BC}	87.8	95.8	94.4^{C}	90.3	98.6	74.6^{A}	70.1	79.1	83.8^{AB}	77.8	89.9
Magnesium (mg/L)	30.5^{C}	28.2	33.1	20.8^{A}	19.2	22.5	26.8^{BC}	24.7	29.1	41.4^{D}	38.0	45.2	23.5^{AB}	20.9	26.4
Potassium (mg/L)	5.58^{C}	4.65	6.69	2.44^{B}	2.05	2.91	1.45^{A}	1.21	1.74	2.64^{B}	2.17	3.21	1.53^{A}	1.17	1.99
Sodium (mg/L)	67.6^{D}	64.3	70.9	29.1^{C}	25.9	32.2	18.5^{B}	15.2	21.8	9.1^{A}	5.6	12.6	7.5^{A}	2.7	12.3
Strontium (µg/L)	218^{A}	153	312	318^{A}	225	449	2462^{B}	1724	3516	12325^{C}	8404	18074	380^{A}	225	640
Sulfate (mg/L)	74.7^{B}	65.6	85.1	64.9^{B}	57.5	73.3	69.4^{B}	61.2	78.7	67.8^{B}	59.2	77.6	33.9^{A}	28.2	40.7
Alkalinity	343^{C}	327	361	249^{A}	237	260	264^{AB}	252	277	287^{B}	273	302	259^{AB}	242	278
Conductivity (µS/cm)	1097.4^{C}	1037.2	1157.6	699.4^{B}	641.1	757.7	693.4^{AB}	633.2	753.6	662.7^{AB}	598.1	727.4	549.8^{A}	461.6	637.9
Dissolved Oxygen (mg/L)	5.89^{A}	5.27	6.60	9.15^{B}	8.21	10.2	9.75^{B}	8.71	10.91	6.20^{A}	5.49	7.00	9.96^{B}	8.50	11.67
pH	6.99^{A}	6.90	7.08	7.85^{BC}	7.76	7.94	7.93^{CD}	7.83	8.02	7.69^{B}	7.59	7.78	8.14^{D}	8.01	8.28
Water Temp. (°C)	20.6^{B}	18.2	22.9	18.3^{AB}	16.0	20.6	17.0^{AB}	14.6	19.4	15.0^{A}	12.4	17.5	15.6^{AB}	12.1	19.1
Strontium 86/87	0.7083^{D}	0.7082	0.7083	0.7080^{C}	0.7080	0.7081	0.7076^{A}	0.7076	0.7077	0.7079^{B}	0.7078	0.7079	0.7079^{B}	0.7079	0.7079

DISCUSSION

With additional wastewater irrigation, the $^{87}Sr/^{86}Sr$ ratio of receiving waters will most likely increase over time to level equal to or greater than 0.7083 with the application of wastewater irrigation. Strontium is a fairly common alkali earth element, similar to calcium and barium. In natural water, strontium is a divalent cation with a (+2) oxidation state. The size of the Sr^{2+} ion is between Ca^{2+} and K^{+} ions and can replace calcium or potassium in a variety of rock-forming minerals including K-feldspar, gypsum, plagioclase, calcium carbonate, and dolomite. Because strontium has an electron configuration similar to that of calcium, it readily substitutes for Ca in minerals. Of the only two dominant minerals containing strontium; celestite ($SrSO_4$) and strontainite ($SrCO_3$), celestite is frequently found in sedimentary rocks. These minerals and weathering of rocks is the source of strontium in groundwater and surface water. In the sedimentary rocks, the distribution of strontium is affected by strong adsorption on clay minerals, substitution of Sr^{2+} for Ca^{2+} in carbonate minerals such as in aragonite and calcite, which are the major rock-forming minerals in limestone. As a result, groundwater found in clay-rich limestone should have higher strontium concentrations, because there is more available. In groundwater, the strontium concentration is dependent upon the initial concentration in water recharging the aquifer, precipitation, the contact time or residence time of the water, and the composition of the host-rocks through which the water flows.

Strontium 87/86 isotope ratios ($^{87}Sr/^{86}Sr$) are typically used in geologic investigations to determine the age of rocks and minerals from the quantities of rubidium (Rb) and strontium isotopes they contain. The dating method works from the fact that ^{87}Rb decays, with a half-life of 48.8 billion years, to ^{87}Sr. With such a large half-life, this means that all the ^{87}Rb present on earth is primordial. In addition, there are only two sources of ^{87}Sr, primordial and that which forms from the decay of ^{87}Rb. During the cooling of magma, as minerals precipitate or crystalize at different temperatures, Sr tends to become concentrated in the plagioclase minerals, leaving Rb in the liquid phase. Hence, this process of fractional crystallization results in the Rb/Sr ratio in residual magma to increase over time resulting in rocks with increasing Rb/Sr ratios with increasing differentiation. If the initial amount of Sr is known or can be extrapolated, the age of the rock can be determined by measuring the Rb and Sr concentrations and the $^{87}Sr/^{86}Sr$ ratio. The ratio $^{87}Sr/^{86}Sr$ in rocks varies greatly with rock type and age. The average $^{87}Sr/^{86}Sr$ ratio for rock types range from 0.702 to 0.716 (Michener and Lajtha 2007). The $^{87}Sr/^{86}Sr$ ratio of modern seawater and precipitation is about 0.7092 (Åberg et al. 1989, Capo et al. 1998). The $^{87}Sr/^{86}Sr$ of groundwater will be similar to the concentration seen in the underlying rock, so strontium isotopes ($^{87}Sr/^{86}Sr$) are routinely use in hydrochemical studies to determine sources and mixing relationships of surface and groundwater. They have proved particularly useful in determining weathering processes and quantifying end-member mixing processes.

In this study, $^{87}Sr/^{86}Sr$ ratio ranged from 0.7077 to 0.7083. Each of the four TLAP monitoring areas; Barton Creek West, Lost Creek, Lazy Nine, and Travis County MUD No. 4 have significantly different mean $^{87}Sr/^{86}Sr$ ratio concentrations for the baseline data. In addition, the Travis County MUD No. 4, which has two baseline sites; Rimrock Spring and North Sycamore Creek have similar strontium ratio mean concentrations for this TLAP irrigation site. This suggest that there is little variance within individual TLAP irrigation areas, but significant differences between different TLAP facilities and their associated irrigation areas. The differences seen in the $^{87}Sr/^{86}Sr$ ratio between TLAP sites is contributed to differences in strontium concentrations in the underlying rocks and in the treated wastewater use for irrigated, where wastewater irrigation is occurring. The assumption is that over time the $^{87}Sr/^{86}Sr$ ratio will increase to levels greater than 0.7082, which is about levels currently observed at Barton Creek West and Lost Creek.

The Barton Creek West TLAP does not seem functional and is allowing pollutants to pass through the system and into the receiving water at Barton Scenic Bluff Spring. The Lost Creek TLAP seems more protective than the Barton Creek West TLAP but could still be leaching excessive chloride, sodium, nitrate, and boron into the receiving water at Short Spring Branch. There are four possible scenarios that would explain these conditions. One scenario is that both TLAP irrigation fields are functioning similarly, but the effluent from the Lost Creek facility has lower concentrations of the tested parameters, thus the receiving water at Short Spring Branch is still less impacted when compared to Barton Scenic Bluff. The second scenario is that the requirements of the Lost Creek TLAP are more protective than the requirements for the Barton Creek West TLAP so that more pollutants are getting bound in the soils of the irrigation field or that more of the wastewater effluent is lost due to evapotranspiration (ET) at the Lost Creek TLAP field and not as much effluent arrives at Short Spring Branch. The third scenario is that the Lost Creek TLAP is not protective but it is located in an area with a large drainage area so that dilution is dampening the impact to the receiving water. Finally, the fourth scenario is some combination of the three other scenarios.

Currently there is no way to analyze the first scenario described above because the City of Austin Watershed Protection Department does not currently know the concentrations in the effluent applied to the irrigation fields at either TLAP facility. It is unlikely that City staff would be given permission to sample water to be irrigated onto TLAP fields and thus it may be impossible to obtain this information.

The Lost Creek facility only has 6.5 acre-feet more storage volume and is authorized to dispose of treated domestic wastewater effluent at a daily average flow approximately four times higher than the Barton Creek West facility, but the Lost Creek facility has approximately 5.8 times the amount of irrigation land to apply effluent. While each facility has roughly the same permitted application rate (2.75 at Lost Creek vs 2.65 acre-feet per year per acre at Barton Creek West) the calculated application rate using the permitted daily average flow and area of irrigation land would be lower at the Lost Creek facility (1.89 acre-feet per year per acre). It is possible that conditions present at the Lost Creek facility are more protective than conditions at the Barton Creek West facility and not as much effluent is leaching into the receiving water downgradient of the Lost Creek facility. This would coincide with the strontium 86/87 ratios being only slightly higher at Short Spring Branch when compared to the un-impacted sites. But strontium 86/87 ratios also support the theory of increased dilution at this site. It is unlikely that WPD will be able to discern which of these scenarios is most likely occurring through continued monitoring of this site.

CONCLUSIONS

Baseline mean $^{87}Sr/^{86}Sr$ ratio for each TLAP monitoring area are significantly different between the facilities and do not vary significantly within each individual area.

Concentrations of chloride, nitrate/nitrite, calcium, potassium, sodium, alkalinity, and conductivity were highest at Barton Scenic Bluff Spring which is influenced by irrigation water from the Barton Creek West TLAP. The pH at this location was lower than the other sites and the rate of detection for copper and boron was higher. Chloride, nitrate, calcium, potassium, sodium, alkalinity, magnesium, and sulfate concentrations were shown to be significantly impacted by irrigating areas with reclaimed water within the Critical Water Quality Zone and/or floodplain as defined by the City of Austin Land Development Code (Porras et al. 2016). Barton Scenic Bluff Spring did not show elevated sulfate or magnesium concentrations when compared to the Little Barton Creek or Rimrock Spring, which are not yet impacted by TLAP irrigation. When compared to the sulfate and magnesium concentrations found in the un-impacted sites for the reclaimed water study, concentrations of sulfate were higher in this study for all sites with the exception of North Sycamore Creek and the concentrations of magnesium were higher in this study at all sites.

Concentrations of chloride and sodium at Short Spring Branch were not as high as concentrations at Barton Scenic Bluff, but were higher than at the three sites not yet impacted by TLAP irrigation. Nitrate/nitrite concentrations were higher at Short Spring Branch when compared to the three sites not yet impacted by TLAP irrigation but not significantly higher. There was only one sample that contained concentrations of boron below the detection limit at Short Spring Branch which was less than the un-impacted sites but not significantly less. Receiving waters impacted by similar TLAP irrigation practices will likely experience elevated $^{87}Sr/^{86}Sr$ ratios along with elevated concentrations of chloride, sodium, and nitrate/nitrite. Calcium, potassium, alkalinity, and conductivity may also be elevated due to TLAP irrigation practices.

RECOMMENDATIONS

- The drainage network at Short Spring Branch is larger and more complex than at other sites in this study. In addition, the complexity of the network is a confounding factor in inferences made about the level of protection provided by the Lost Creek TLAP. It is unlikely that WPD staff will be able to monitor all of the necessary locations to assess the Lost Creek TLAP. Thus, WPD staff recommend that Short Spring Branch be dropped from future sampling.
- Continue sampling downgradient of Barton Creek West, Lazy Nine, and Travis County MUD No. 4 facilities when the latter two facilities come online in order to analyze pre- and post-TLAP facility data. The Quality Assurance Project Plan (QAPP) shall define at what point the facilities are to be considered online and sampling should recommence.
- Relocate the North Sycamore at Foster Ranch Road monitoring site closer to and downgradient of the effluent irrigation area of Travis Count MUD No.4.

REFERENCES

Åberg, G., G. Jacks, and P.J. Hamilton. 1989. Weathering rates and $^{87}Sr/^{86}Sr$ ratios: An isotopic approach. Journal of Hydrology, 109(1): p 65-78.

Capo, R.C, B.W. Stewart, and O.A. Chadwick. 1998. Strontium isotopes as tracers of ecosystem processes: theory and methods. Geoderma, 82: p. 197-225.

Helsel, D.R. and T.A. Cohn. 1988. Estimation of descriptive statistics for multiply censored water quality data. Water Resources Research, 24(12): p 1997-2004.

Helsel, D.R. 2012. Statistics for Censored Environmental Data Using Minitab and R. 2nd edition. John Wiley & Sons, Hoboken, NJ.

Herrington, C., M. Menchaca, and M. Westbrook. 2011. Wastewater disposal practices in the Barton Springs Zone. City of Austin Watershed Protection Department. SR-11-01.

Hollander, M. and D.A. Wolfe. 1999. Nonparametric Statistical Methods. 2nd edition. John Wiley & Sons, New York, NY.

Klein, J.P. and M.L. Moeschberger. 2003. Survival Analysis: Techniques for Censored and Truncated Data. Springer-Verlag, New York, NY.

Koch, G.G. 1982. "Intraclass correlation coefficient." *Encyclopedia of Statistical Sciences*. Ed. Samuel Kotz and Normal L. Johnson. John Wiley & Sons, New York, NY. p 213-217.

Kutner, M.H., C.J. Nachtsheim, J. Neter, and W. Li. 2005. Applied Linear Statistical Models. McGraw-Hill/Irwin, Boston, MA.

Mahler, B.J., M.L Musgrove, C. Herrington, T.L. Sample. 2011. Recent (2008-2010) concentrations and isotopic compositions of nitrate and concentrations of wastewater compounds in the Barton Springs Zone, South-Central Texas, and Their Potential Relation to Urban Development in the Contributing Zone. US Geological Survey. SIR-2011-5018.

Michener, R. and K. Lajtha. 2007. Stable Isotopes in Ecology and Environmental Science. Blackwell Publishing Ltd, Malden, MA.

Porras, A., A. Richter, S. Hiers, A. Clamann, M. Scoggins, C. Herrington, W. Burdick, and S. Sudduth. 2016. Reclaimed water irrigation water quality impact assessment. City of Austin Watershed Protection Department. SR-16-06.

Ross, L. 2011. Land-applied wastewater effluents impacts on the Edwards Aquifer. Prepared for the Greater Edwards Aquifer Alliance and the Save Our Springs Alliance. http://www.aquiferalliance.net/Library/GEAAPublications/GlenroseEdwardsWastewaterReport20111103.pdf

Shumway, R.H., R.S. Azari, and M. Kayhanian. 2002. Statistical Approaches to Estimating Mean Water Quality Concentrations with Detection Limits. Environmental Science & Technology, 36(15): p 3345-3353.

Singh, A. and J. Nocerino. 2002. Robust Estimation of Mean and Variance Using Environmental Data Sets with Below Detection Limit Observations. Chemometrics and Intelligent Laboratory Systems, 60(1-2): p 69-86.

Turner, M. 2010. Bear Creek Receiving Water Assessment. City of Austin Watershed Protection Department. SR-10-10.

Water Resource Evaluation Standard Operating Procedures (WRE SOP). 2016. City of Austin Water Resource Evaluation Section Standard Operating Procedures Manual.

Attachment 2

Upper Barton Creek Gain/Loss Study at Shield Ranch

City of Austin
WATERSHED PROTECTION

Upper Barton Creek Gain/Loss Study at Shield Ranch

RR-24-01
January 2024

Lindsey Sydow, P.G.
Sarah J. Zappitello, P.G.
Kelsey Parker
Abby Guidry

Abstract

The Trinity and Edwards Aquifers are regionally connected karst systems that provide crucial freshwater resources and endangered salamander habitat in semi-arid Central Texas. Trinity Aquifer springs in the Contributing Zone of the Edwards Aquifer supply baseflow to creeks, including Barton Creek. Contributing Zone creeks flow across the Edwards Aquifer Recharge Zone where they lose water to the Edwards Aquifer and – in the Barton Springs Segment of the Edwards Aquifer (BSEA) – discharge at Barton Springs and Cold Springs. As Central Texas becomes more urbanized and native landscapes become smaller, rarer, and more disconnected within the BSEA contributing watersheds, protecting land to maintain high quality baseflow in creeks and at Barton Springs is increasingly urgent. Shield Ranch, the largest conservation easement on Barton Creek, protects nearly 7,000 acres (approximately 10%) of the watershed and over six miles of the creek. This study characterized groundwater-surface water interactions along Barton Creek through Shield Ranch using standard handheld velocimeter methods during three separate gauging events from June-July 2019. The results demonstrated that Barton Creek within Shield Ranch is a net gaining stream with some local flow loss into alluvium within the creek channel. Notable gaining reaches and visible spring and seep zones were recorded. As is typical for Barton Creek during hotter and drier weather, baseflow decreased throughout the summer with correspondingly smaller net total gains across the ranch. As the overall system dried during the summer, the declining groundwater inputs indicated that the springs are gravity fed and the local water table of the Trinity Aquifer drops seasonally. Climatological changes, which will likely exacerbate the seasonal drop in the water table, coupled with increasing population growth and urbanization in the Hill Country west of Austin will continue to threaten water quality and potential natural recharge to the system, making land conservation efforts like those at Shield Ranch imperative for the future of Central Texas.

Keywords: Gain/Loss, Barton Creek, Shield Ranch, springs, Trinity Aquifer

Introduction

The City of Austin Watershed Protection Department (WPD), in partnership with Shield Ranch and the Barton Springs Edwards Aquifer Conservation District (BSEACD), conducted a gain/loss study to characterize groundwater and surface water interactions on Barton Creek throughout Shield Ranch in the summer of 2019. Shield Ranch is managed for conservation and environmental protection and is the largest conservation easement in the Barton Creek watershed, protecting nearly 7,000 acres (approximately 10%) of the watershed and over six miles of the creek (Figure 1). Conservation easements on the Ranch are held by the Nature Conservancy and the City of Austin.

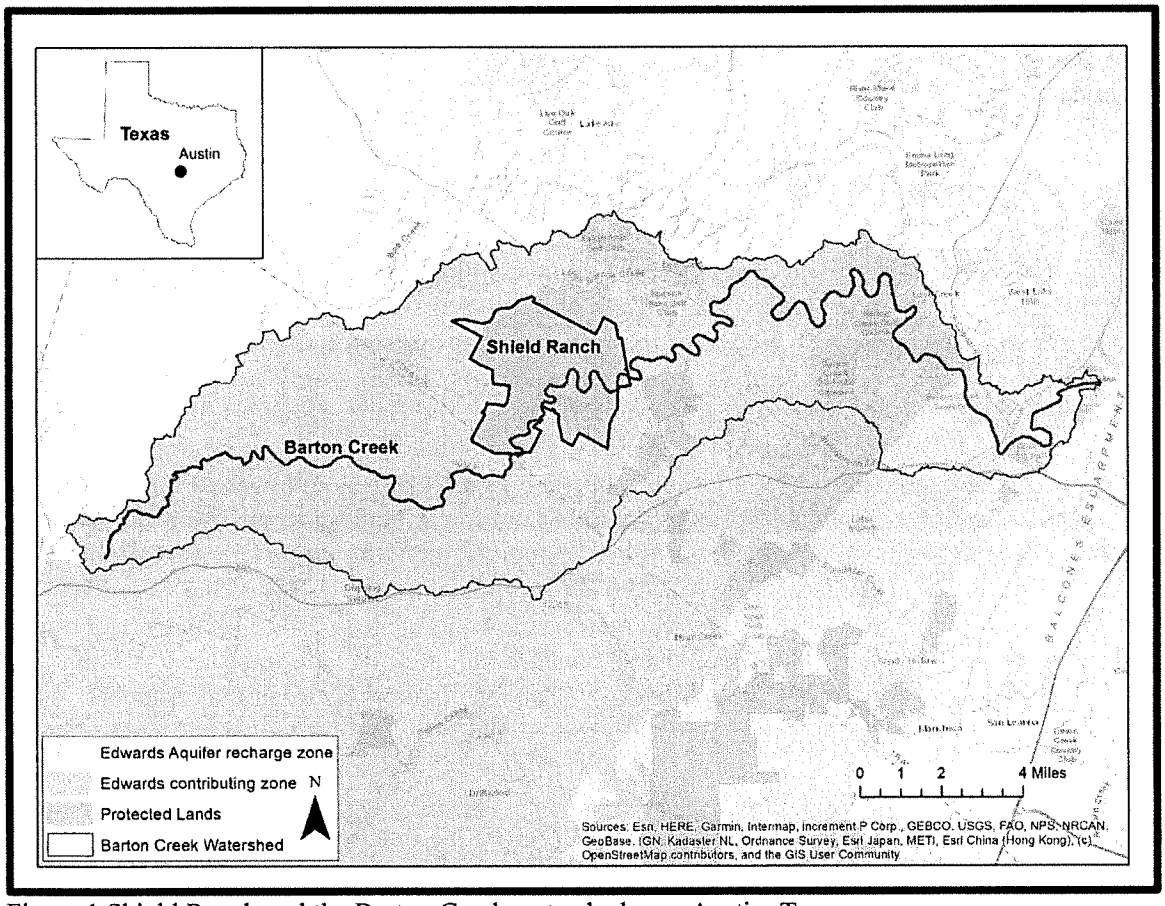


Figure 1.Shield Ranch and the Barton Creek watershed near Austin, Texas.

Trinity Aquifer-fed springs provide the dominant source of baseflow to Barton Creek, which flows downstream across the Barton Springs Edwards Aquifer (BSEA) Recharge Zone and past Barton Springs to the Colorado River. Under recharge conditions, creek water recharges the BSEA and discharges at Barton Springs and Cold Springs, both of which contribute to the total discharge of the Colorado River. The Glen Rose Limestone, which partially comprises the upper and middle Trinity Aquifer, is exposed at the surface throughout most of Shield Ranch including the channel of Barton Creek and its tributaries, although non-contiguous Edwards Limestone is also present on some isolated hilltops on site. This area of the Trinity Aquifer is also referred to as the "Contributing Zone" of the Edwards Aquifer, since rain that falls in this area contributes to

creeks that flow downstream to the Recharge Zone where the Edwards Limestone is exposed at the surface. Shield Ranch's size and location on Barton Creek in the Contributing Zone makes it important for both the water quality and quantity reaching the BSEA Recharge Zone downstream (Figure 1).

Barton Creek is a prime example of the hydrogeological connectivity between the Trinity Aquifer and the BSEA. Interactions between the Trinity and Edwards Aquifers were underestimated in the past but have become a topic of great interest to hydrogeologists and water resource managers in Central Texas. Of interest are both groundwater-surface water interactions and subsurface connectivity between the two aquifers; subsurface connectivity, while beyond the scope of this study, is introduced in Gary et al. (2011). Recent studies within the BSEA Contributing Zone on Onion Creek and the Blanco River (Hunt et al. 2017, Smith et al. 2014) as well as other creeks within the San Antonio Edwards Aquifer (Green et al. 2011) have demonstrated significant flow loss and recharge to the Trinity Aquifer. The volume of spring contributions (gains) and flow losses via recharge has not been as thoroughly characterized in the Barton Creek Watershed upstream of the Recharge Zone. Some stream gauging occurred on Barton Creek in the past which showed net flow gains upstream of the Recharge Zone (COA 1997), but comprehensive gain/loss studies have not characterized the groundwater-surface water interactions across discrete reaches of the creek during varying streamflow conditions.

This study, performed as an intern-led project over 3 sampling events in summer 2019, is an initial look at the volume of spring (groundwater) influence on the creek within Shield Ranch as well as the influence of the creek on groundwater through gain/loss measurements and analysis. The site-specific information provided herein on the groundwater-surface water interactions in one of Austin's premier high-quality creeks can support the management and protection of this valuable resource. Future studies may compare this baseline information with more urbanized watersheds or examine different, smaller, or larger portions of Barton Creek.

Methods

A gain/loss study uses a series of stream discharge measurements gauged during baseflow to quantify the gains and/or losses of flow along a stream reach. The measurements are taken as close to the same time as possible in order to evaluate spatial flow variations rather than temporal variations. The gain/loss analysis (Equation 1), essentially a water balance, is a basic mathematical and geospatial technique used frequently by hydrologists and hydrogeologists to evaluate groundwater – surface water interactions (e.g. Braun and Gryzb 2015, Hunt et al 2017). Unaccounted for gains and/or losses indicate features like springs or sinkholes submerged within the channel.

Equation 1. Gain/loss analysis modified from Braun and Grzyb (2015) pg. 18:
The difference between inflows and outflows, referred to as the gain (positive/increase in flow) or loss (negative/decrease in flow), Q_{GL}, is estimated as:

$$Q_{GL} = Q_D - Q_U - I + D - R + E$$

where:

Q_D is measured streamflow at the downstream boundary of the reach
Q_U is measured streamflow at the upstream boundary of the reach
I is measured or estimated inflows from tributaries
D is diversions from the reach
R is return flows to the reach
E is estimated evaporation losses
(Units of all variables in cubic feet per second.)

Barton Creek at Shield Ranch has no diversions or return flows. Staff analysis assumed that the diffuse inputs to baseflow in the stream were from springs. Evaporation was checked using the regional standard (LCRA daily measurement); however, the value was low enough to be within the margin of error for the stream gauging measurements (+/- 10%) and therefore was assumed to be negligible.

WPD staff conducted three separate stream gauging events along Barton Creek within Shield Ranch on June 20-21, July 10-11, and July 22-24, 2019. Sixteen sites (Figure 2) along Barton Creek within Shield Ranch were selected for flow measurements based on tributary confluences and access, with three of these sites added after the first gauging event. To quantify tributary contributions, flow was measured either: 1) both upstream and downstream of the tributary on the main stem or 2) on the tributary itself and on the main stem either upstream or downstream of the tributary. During the second stream gauging event, BSEACD staff also measured flow at more widely spaced intervals along the length of Barton Creek up and downstream of Shield Ranch, but all upstream of the Edwards Aquifer Recharge Zone.

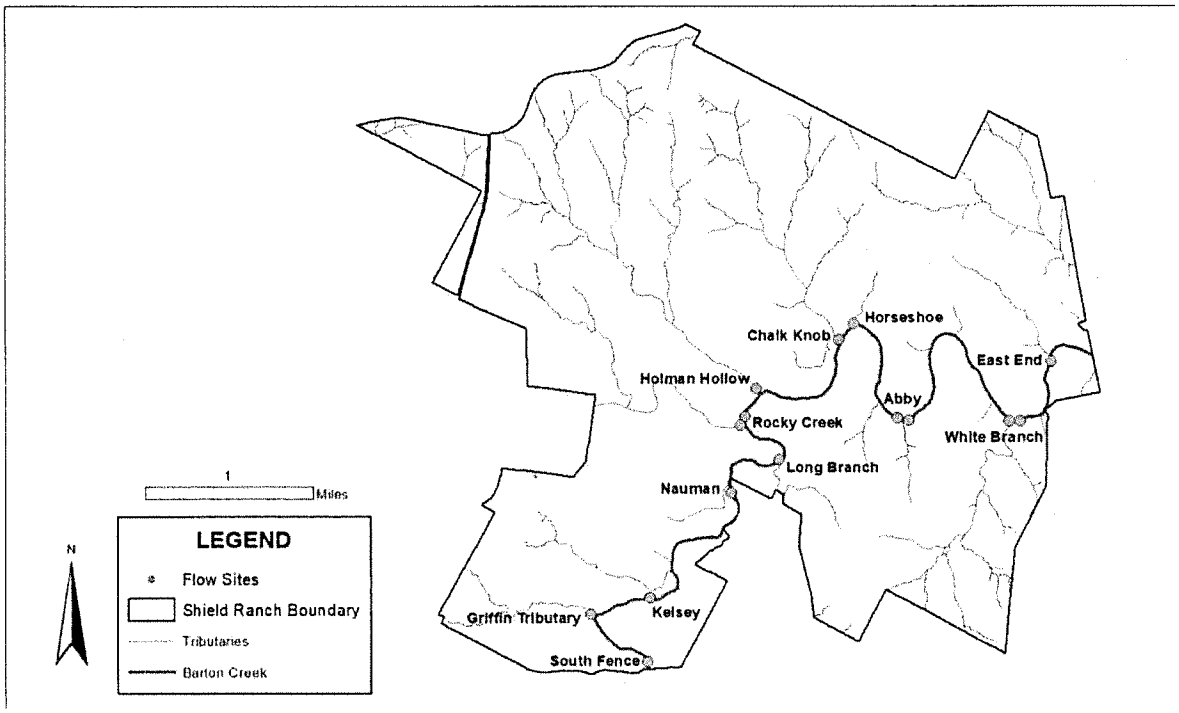


Figure 2 Measurement sites near key confluences on Shield Ranch

Stream gauging methods and techniques followed methods detailed in Turnipseed and Sauer (2010). Staff measured flow using a handheld Acoustic Doppler Velocimeter (ADV): a FlowTracker at sites with water depths greater than 0.3 ft (most sites, see Photo 1) and a Marsh McBirney flow meter at shallow sites (<0.3 feet deep). The FlowTracker calculated total discharge using the midsection method (SonTek 2007, Turnipseed and Sauer 2010). Some tributaries could not be measured due to very low flow, so flow was visually estimated.

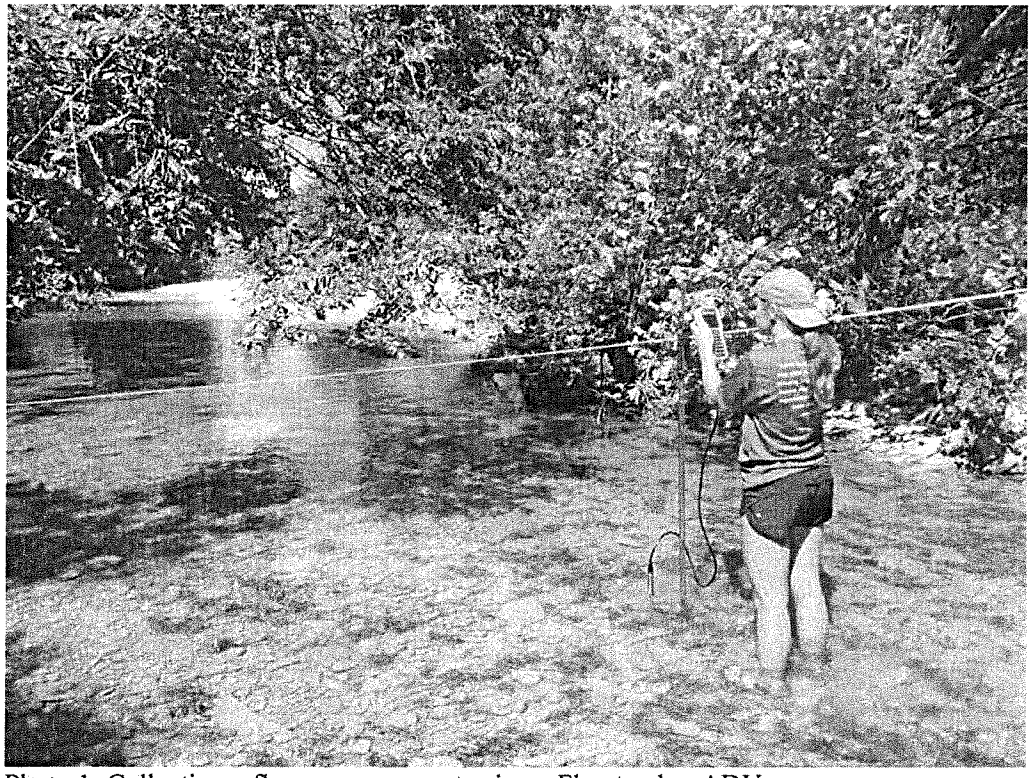


Photo 1: Collecting a flow measurement using a Flowtracker ADV.

For quality assurance, during each event field staff collected at least two flow measurements at each site until two measurements were within 10% of each other. Staff averaged these measurements to calculate a discharge value for each site, reported in Table 1 and Figure 4 in the Results section. Net gains across Shield Ranch were calculated by subtracting discharge at the upstream-most station from discharge at the downstream-most station (i.e., to include tributary contributions) and then tributary contributions and main-stem groundwater contributions were considered separately.

Results

As the study progressed during dry, hot weather with minimal rainfall, overall baseflow in Barton Creek declined and the number of tributaries with measurable flow decreased over subsequent events as well (Figure 3). While gauging was planned for baseflow conditions, minor rainfall occurred on day two of the third sampling event, reducing the validity of these measurements. A significant storm event (see large peak in discharge on June 25) occurred between Events 1 and 2. This event was substantial enough to cause small changes to channel geomorphology (e.g. noticeable scouring or gravel deposition near some sites) between Events 1 and 2 as observed in staff field notes.

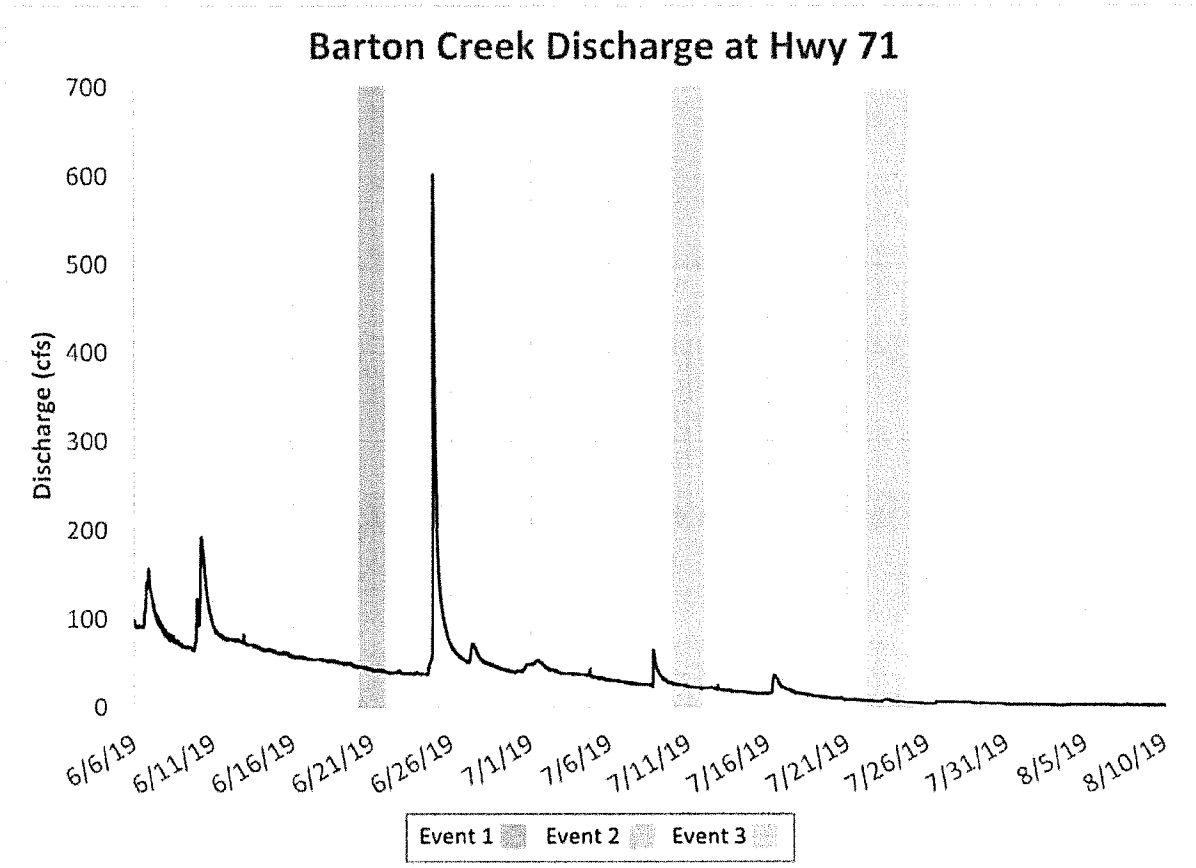


Figure 3: Discharge at USGS gaging station 08155200 on Barton Creek at Hwy 71 from June-July 2019. Each of the gauging events conducted in this study are highlighted. All measurements from Events 1 and 2 were taken under baseflow conditions, and baseflow decreased throughout the summer.

All three sampling events showed that Barton Creek is a net gaining stream across Shield Ranch, with measured creek flow increases of 52 – 162% (including tributary contributions) from the upstream end of the ranch to the downstream end (Figure 4 and Table 1).

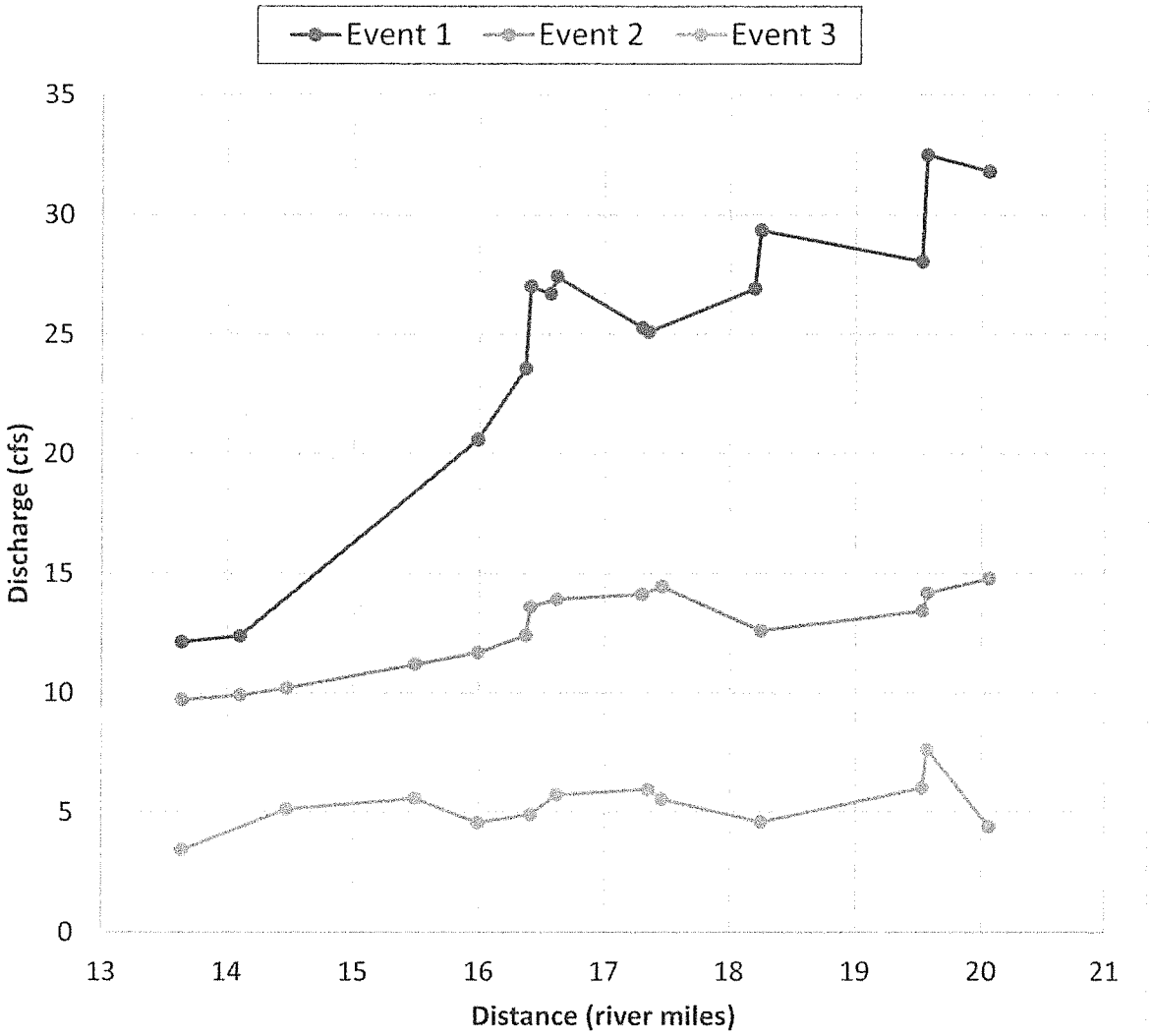


Figure 2: Gains and losses in discharge, measured in cubic feet per second (cfs) over distance (river miles) from Barton Creek headwaters. At each gauging event there were net gains across the ranch (includes tributary contributions) of 19.66 cfs, 5.09 cfs, and 0.95* cfs, respectively. Net gains across the ranch were calculated by subtracting the upstream flow measurement (South Fence) from the downstream flow measurement (East End).

*Data from Event 3 are flawed and are not an accurate representation of flow; these flaws are examined in the Discussion section.

Site Name	Location in River Miles	Flow in Cubic Feet per Second (cfs)					
		Event 1: June 20-21		Event 2: July 10-11		Event 3: July 22-24	
		Station Flow	Segment Gain/Loss	Station Flow	Segment Gain/Loss	Station Flow	Segment Gain/Loss
South Fence	13.64	12.13		9.71		3.45	
Griffin Tributary	14.1	0.25		0.2		--	
Kelsey	14.47	--		10.2	0.29	5.14	1.69
Nauman	15.49	--		11.2	1	5.58*	0.44*
Long Branch	15.99	20.6	8.22	11.69	0.49	4.58	-1*
Rocky US (calculated)	16.37	*23.57*	2.97	*12.41*	0.72	--	0.33*
Rocky Tributary	-	3.45		1.20		<0.1	
Rocky DS	16.41	27.02		13.61		4.91*	
Holman US	16.57	26.72	-0.3	--	--	--	0.83*
Holman Tributary	-	0.70		0.32		<0.1	
Holman DS	16.62	*27.42*		*13.93*		5.74*	
Chalk Knob US	17.3	25.29	-2.13	14.13	0.2	--	0.23
Chalk Knob DS	17.35	25.11		--		5.97*	
Horseshoe	17.46	--		14.46	0.33	5.56*	-0.41*
Abby US	18.2	26.91	1.8	--	-1.85	--	-0.96*
Abby DS	18.25	29.35		12.61		4.6	
White Branch US	19.53	28.05	-1.3	13.44	0.83	6.03	1.43
White Branch DS	19.57	32.49		14.19		7.64**	1.61
East End	20.06	31.79	-0.7	14.8	0.61	4.40**	-3.24
Percent of total flow gain from groundwater inputs along Main Stem Barton Creek:		66%		88%		--	
Percent of total flow gain from tributary contributions:		34%		12%		--	

Table 1: Flow measurements at each site during the three gauging events. Segment gains (green) or losses (red) are representative of the segment of Main Barton Creek upstream of the point on the table for which they are recorded.Sites not measured during the first event in June had not yet been selected. Kelsey, Nauman, and Horseshoe were added for Events 2 and 3 to provide greater detail. Italicized values were calculated from a tributary and corresponding main stem measurement. Sites not measured during Events 2 and 3 indicate tributaries that went dry or where discharge was too low to measure.

*These samples from Event 3 were collected following a rainfall event that increased flow in Barton Creek. These values cannot be compared to the other measurements collected during Event 3, thus any gains or losses based on these measurements are invalid and should be disregarded.

**The two most downstream sites were moved due to low flow conditions during the final gauging event and are not directly comparable to Events 1 and 2.

The upstream-most segment of Barton Creek from "South Fence" to the Rocky Creek confluence had the greatest and most consistent gains across the three events. Seep zones were observed, either visually or as temperature gradients presumed to be inflows at several locations on Barton Creek. Stark temperature gradients or cold inflows from channel alluvium were observed at the Long Branch confluence, Rocky Creek confluence, Holman Hollow, and downstream of the Abby confluence. Several discrete springs and seep zones were observed on the left bank of Barton Creek from Chalk Knob to Horseshoe (Photos 2-5). Horseshoe tributary was actually a short spring run created by several small seeps. Groundwater contributions along the main stem of Barton Creek were responsible for approximately 66% of total flow gain across Shield Ranch during Event 1 and 88% of total flow gain during Event 2.

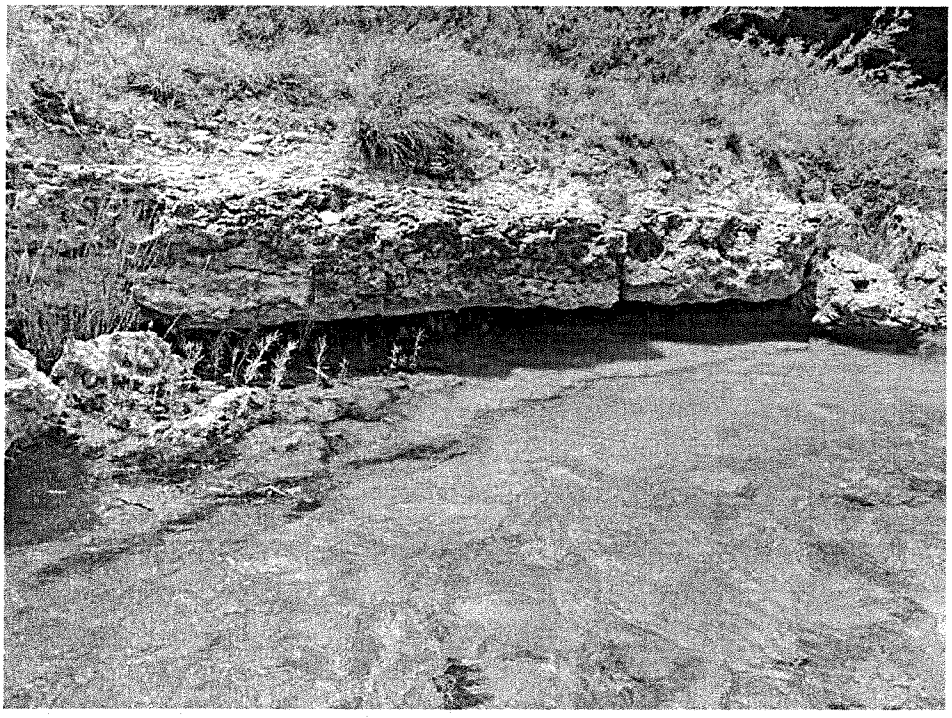


Photo 2: Undercut Glen Rose outcrop with seep zone underneath overhang

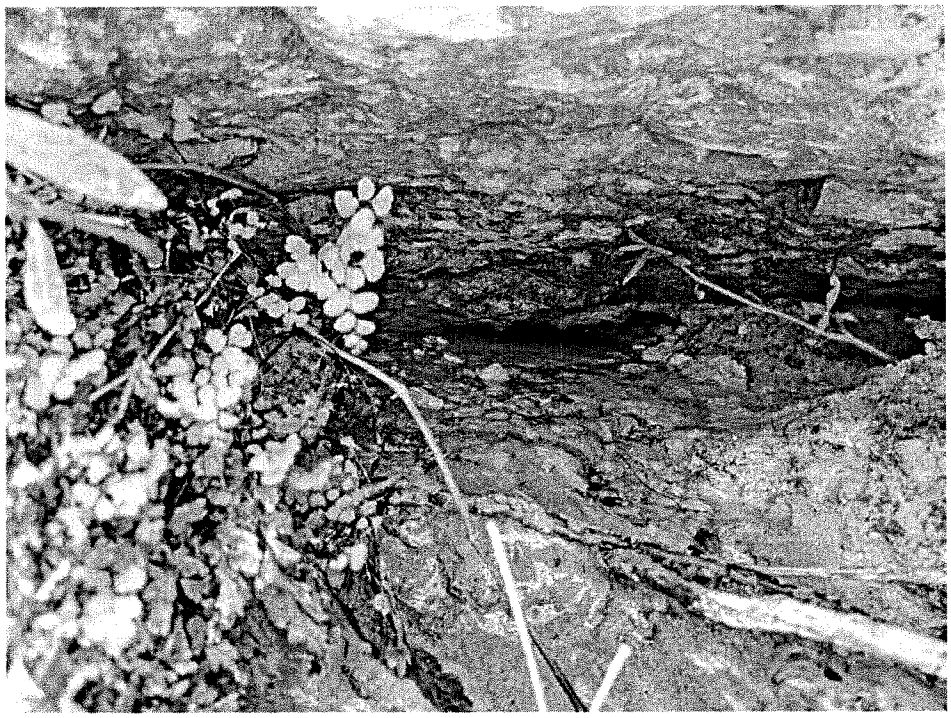


Photo 3: One of several springs under overhanging Glen Rose outcrop

Photo 4: Spring along left bank of Barton Creek between Chalk Knob and Horseshoe

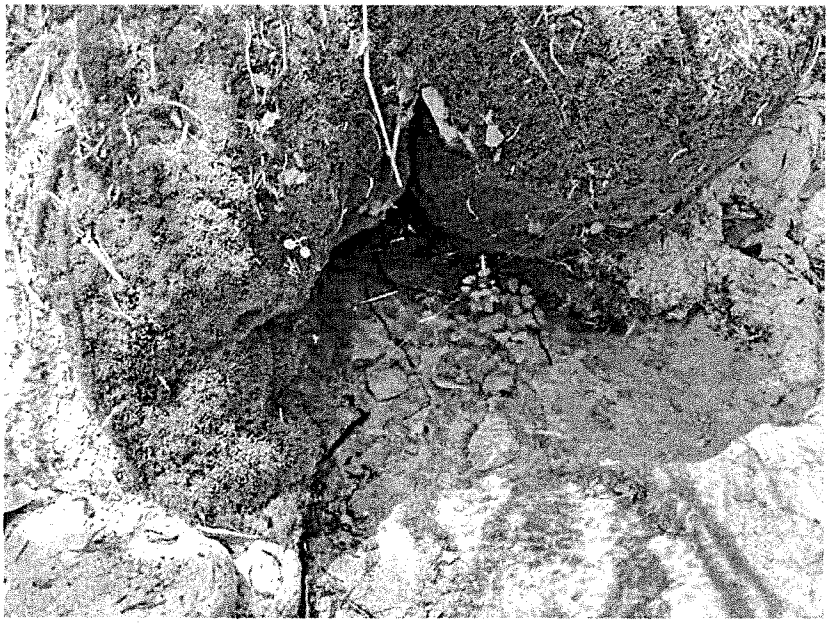


Photo 5: One discrete orifice of Horseshoe Springs

During Event 2, collaborators from BSEACD gauged flow at other Contributing Zone sites along Barton Creek both upstream and downstream of Shield Ranch. Significant flow gains are present throughout Barton Creek across the Contributing Zone (Figure 5). The detail across Shield Ranch illustrates the value of this type of flow measurement study.

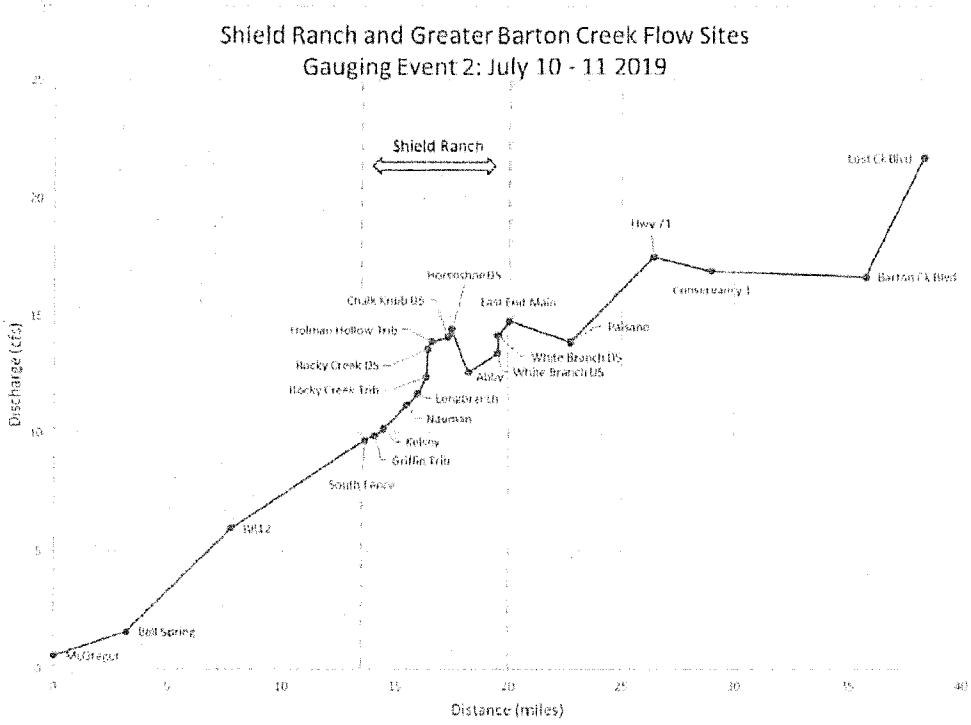


Figure 3: Flow measured during Gauging Event 2 on the upper 40 miles of Barton Creek. Shield Ranch extent shown in yellow.

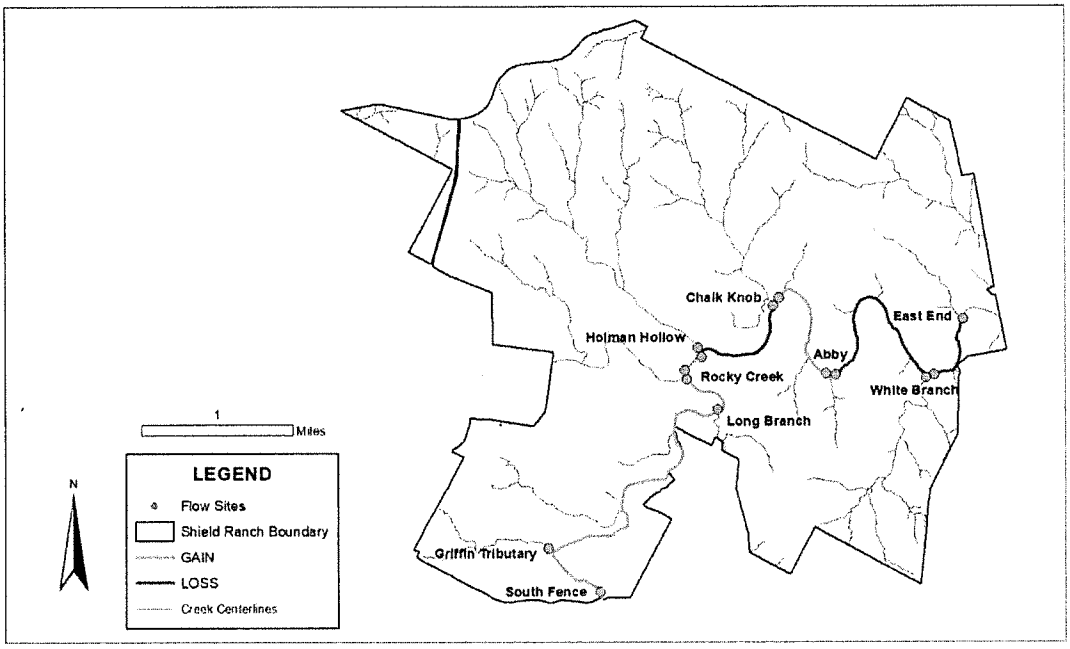


Figure 4: Gauging Event 1 Gains and Losses. Losses at the downstream end of the Ranch were very small (see Table 1), and all losses were within the QC margin of error for a measurement.

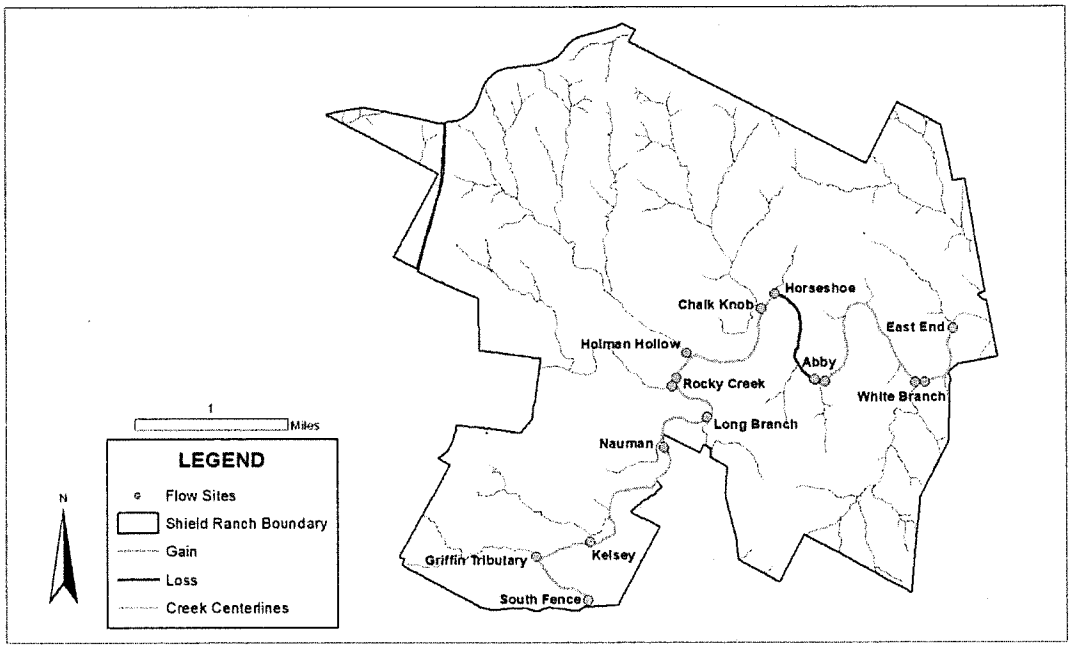


Figure 5: Gauging Event 2 Gains and Losses. The documented loss was relatively small.

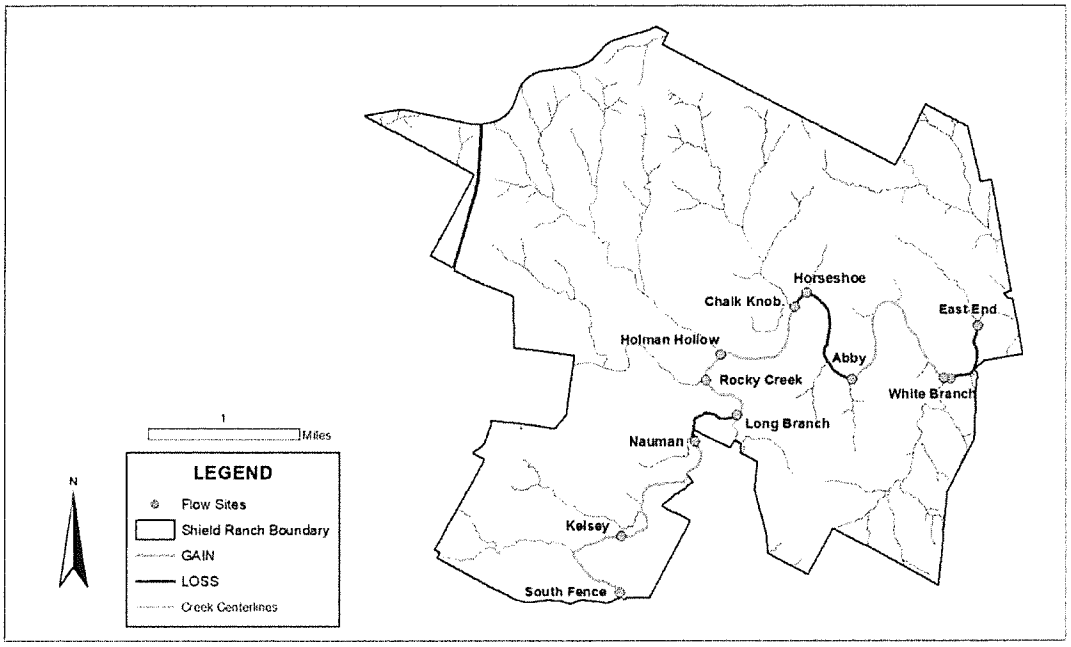


Figure 6: Gauging Event 3 (flawed) Gains and Losses. Low flows during this event made measurements difficult, and some stations were moved due to unsuitability. Additionally, a rainfall event that occurred in the middle of Event 3 rendered most of the measurements useless, including the ones that depict a loss between Nauman and Long Branch.

Figures 6-8 spatially represent the gaining and losing reaches within Shield Ranch during each of the gauging events. Main stem reaches upstream of Holman Hollow consistently showed flow gains (measurement from Event 3 is invalid). Reaches with flow losses were typically on the lower end of the ranch, and measurements frequently had to be taken at sites with alluvial channel bottoms where all flow may not have been detectable via ADV methods. Given that (1) a likely small, but unknown, percentage of flow could not be measured through the alluvium, and (2) the reaches with recorded losses were not consistent across the three gauging events, it is not possible to classify these small and inconsistent flow reductions as losses to karst features.

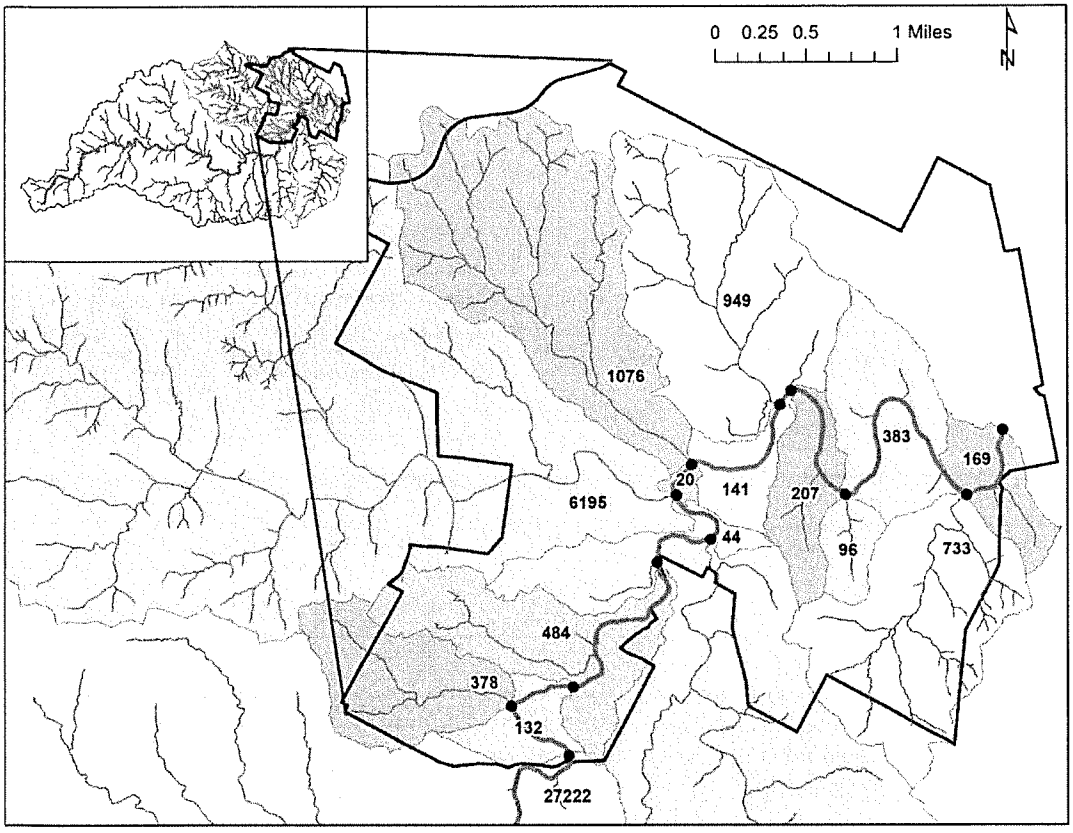


Figure 9: Drainage areas (in acres) to each flow site along Barton Creek within Shield Ranch. Several of these tributary watersheds are completely or nearly completely within the conservation easement boundaries. 37% of the study drainage area is protected by the Shield Ranch boundaries.

Figure 9 shows the areas of each subwatershed that drain to a gauging station along Barton Creek in this study. Percent of total flow gain in Events 1 and 2 versus corresponding subwatershed area is shown in Figure 10. A Pearson's product-moment correlation indicated a positive but statistically insignificant relationship between percent of total flow gain and drainage area (Event 1: ρ=0.56, P = 0.14; Event 2: ρ=0.47, P = 0.12), indicating flow gains are gravity-fed springs from the Trinity Aquifer rather than overland flow. Event 3 data were not considered.

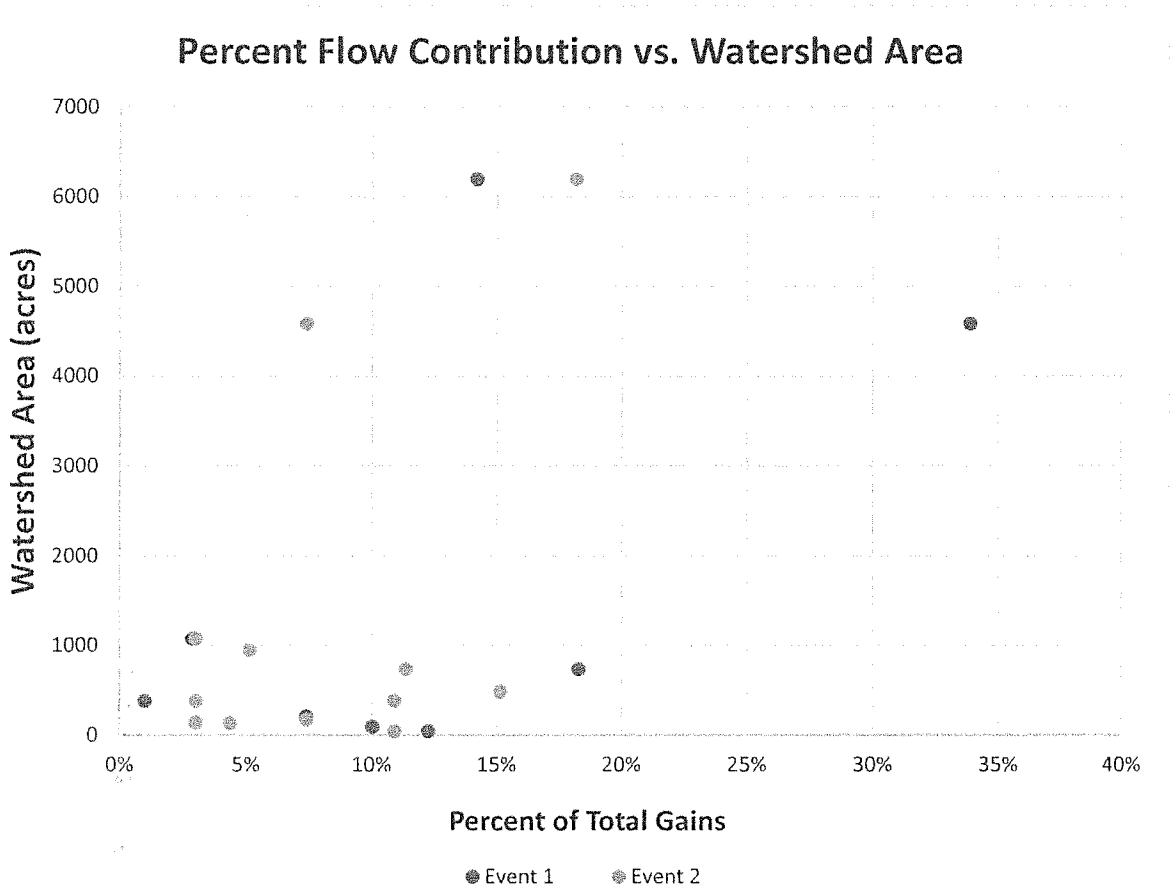


Figure 10: The percentage of flow gained by a segment was plotted against drainage area to help visualize any potential relationship between. Event 3 was not considered due to flaws discussed in the following section.

Discussion

Site Selection

Detailed flow measurements illustrate challenges in conducting this study as well as interpreting the results. Poor measurement cross sections, either due to water depth or channel bottom composition, made data interpretation most difficult during lower flows. While the ideal cross section for measuring flow at a site has a bedrock or less permeable channel bottom (Rantz et al., 1982), it was not always possible to select sites with those ideal conditions that also characterized the desired reaches and tributary inflows. Some stations selected were the best available option for quantifying a desired stream reach despite having alluvial channel bottoms. Three sites in particular stand out as problematic:

1. The location for measuring the main stem of Barton Creek downstream of the Long Branch confluence was not ideal due to its alluvial bottom, but was the best choice given very deep water immediately upstream and rapids immediately downstream. Long Branch surface flow contributions were impossible to quantify to a greater detail than

estimates due to channel morphology and flow conditions. The confluence with Barton Creek created a large backwater area that made measuring flow challenging in general and impossible using ADV methods on the upstream side. A significant temperature gradient suggested spring contributions in this same area as shown in Events 1 and 2.

2. The Abby tributary joins Barton Creek from the cut bank on river right, but at the time of the study there was a large gravel bar on the opposite bank. Water from Barton Creek could be observed moving through the gravel and cobbles of this deposit. The reach upstream of Abby was calculated as gaining during Event 1 but losing in Events 2 and 3. Rather than recharge to karst features, these "losses" likely indicate that, as creek levels dropped during the drying conditions, a greater proportion of creek discharge was flowing through the gravel bar and could not be measured. This is further supported by the presence of temperature gradients on both sides of Barton Creek near the Abby DS site, observed even after the tributary had gone dry, suggesting groundwater contributions rather than losses.

3. During Event 1, the Chalk Knob tributary was not flowing at the rate anticipated during the planning phase of this study, and the majority of visual flow contributions in the area were from springs along the bank of Barton Creek. Presumably due to inconsistencies in the cross sections of the upstream and downstream sites, Chalk Knob DS was measured as having a nominally lower flow (25.11 cfs) than Chalk Knob US (25.29 cfs) during the first event despite small visual inflows present between the two stations. This discrepancy is within the margin of error and not of great concern, but it does illustrate the inaccuracy that can be introduced by less-than-ideal site conditions. Given the similarity in measurements between the upstream and downstream sites during Event 1, only one of the two sites was measured during subsequent events.

Event 3 Problems and Invalid Data

There were several hurdles to gauging flow during Event 3. The information obtained from this sampling effort is useful in that it supports the coarse conclusion that Barton Creek remains a net gaining stream across Shield Ranch, even under the dry conditions of late summer with reduced spring contributions. However, inconsistencies because of low flow conditions, a minor storm event, and a longer sampling event duration render this data quality too poor to make conclusions about individual segment gains and losses within Shield Ranch.

Discharge in Barton Creek dropped by ~75% from the first event to the third event. Several tributaries were either dry or flow was too low to measure. This impacted data collection in two ways:

1. For all sites with alluvial channel bottoms during Event 3 (most sites), the proportion of flow that could not be detected by ADV methods was higher due to lower flow in the overall system, significantly increasing the inherent error at those sites (e.g. Abby tributary).

2. At some sites, the lower stream level and velocities made it impractical to collect a measurement, requiring the measurement be taken at a different location. For example,

both the East End site and the White Branch DS site were moved during Event 3 due to a high proportion of flow within alluvium rather than at the surface. This means the loss documented for the downstream-most segment is not representative of the same segment characterized in Events 1 and 2. Furthermore, the relocated White Branch DS site had a bedrock channel bottom, meaning nearly all the flow was likely captured by the Flowtracker. Conversely, the relocated East End site had a "solid alluvial bottom" as noted in the field notes, meaning some of the flow captured in the White Branch DS measurement was likely within the alluvium at the new East End site where it could not be detected. This "loss" is most likely more representative of site discrepancies than changes in flow.

Because of reduced staff availability, Event 3 took place over three days rather than the two days taken to collect measurements during Events 1 and 2. In addition to the inherent temporal variability an extra day introduces to the dataset, a small rainfall event occurred on the morning of the second day. Based on the small rise in Barton Creek discharge at Hwy 71 seen on Figure 3, this event increased flow and rendered the measurements collected on July 23rd essentially useless. The error this introduces is most obvious in the false "loss" between Nauman and Long Branch. Nauman was gauged the day of the storm under higher flow conditions while Long Branch was measured the following day when the minor stormflow had largely receded.

Rather than cancelling Event 3 following the rain event, sampling continued due to the impending conclusion of the WPD Internship Program and the opportunity for interns to observe how easily error can distort a dataset. While all data from Event 3 were presented in Table 1, the only conclusion that can reasonably be drawn from the flawed data is that even under much drier conditions than the first two events, Barton Creek remains a net gaining stream across Shield Ranch. We can safely make this determination because (1) the two most upstream sites and two most downstream sites were all measured on the first day of Event 3, making them temporally comparable; and (2) even at the relocated East End site, flow was >25% higher than at the upstream South Fence.

Spring Contributions and Measured Flow Loss

Overall, the results across all three gauging events demonstrate that Barton Creek is a primarily spring-fed, net gaining stream across Shield Ranch. Several springs and seep zones were observed either visually flowing directly into Barton Creek or detected as in-channel temperature gradients.

Groundwater contributions directly to the main stem of Barton Creek provided the majority of flow gains across the ranch in both Events 1 and 2, accounting for up to 66% and 88%, respectively, of inflows with tributaries providing the remainder of the contributions. These figures are likely biased slightly high given that flow in the Long Branch tributary had to be estimated visually due to challenging site conditions and may have been underestimated, but this discrepancy is likely small. The increase in the proportion of main-stem groundwater contributions between Events 1 and 2 is consistent with drying conditions and illustrates the effect of the drop in the water table: as higher elevation springs that feed tributaries went dry, lower elevation springs along the main stem continued to flow.

Furthermore, the positive but statistically insignificant relationship between subwatershed area and percentage of total flow gain during Events 1 and 2 is further evidence that Barton Creek under baseflow conditions is sourced primarily from gravity-fed springs within the unconfined, upper Trinity Aquifer. A stronger relationship between subwatershed area and percent total flow gain would be expected in a system where surface water inputs (e.g. tributary inflows) dominate flow contributions.

The flow losses measured in Barton Creek at Shield Ranch were minor, spatially and temporally inconsistent, and do not imply the presence of significant recharge features. This is in contrast to the substantial losses documented in upper Onion Creek, which indicated a connection to lower units of the Trinity Aquifer (Hunt et al., 2017). In stream segments with minor losses, some creek flow is likely moving downstream through the alluvium and not measurable by methods used in this study.

Conclusions & Implications

All three gauging events demonstrated that, overall, Barton Creek within Shield Ranch is a net-gaining stream. Trinity Aquifer springs are responsible for these gains in both the tributaries and the main stem of the creek. Over the summer, groundwater availability decreased as rainfall decreased over the Trinity Aquifer. As the system dried throughout the summer, declining spring inputs indicated that Trinity Aquifer springs are gravity fed and that the local water table drops seasonally.

The majority of gains were from groundwater contributions along the main stem of Barton Creek rather than tributary inflows. This proportion increased from Event 1 to Event 2 under lower flow conditions, illustrating the drop in the water table as higher elevation springs within tributaries had reduced discharge or went dry while lower elevation springs along the main stem continued to flow.

Losses were minimal and inconsistent both spatially and temporally, indicating shallow alluvial losses rather than the presence of significant recharge features attributable to geological formations.

As the climate continues to change, Central Texas is expected to become generally hotter and drier with precipitation falling in less frequent, more intense events (Nielsen-Gammon et al., 2021), exacerbating the seasonal drop in the water table. Furthermore, rapid population growth and urbanization in the area threaten both water quality and quantity. Preserving native landscapes maintains some of the natural resilience of the system and can help mitigate the impacts of climate change and urbanization to Central Texas streams and aquifers.

Acknowledgements

Special thank you to City of Austin Watershed Protection Internship Program, Shield Ranch, BSEACD, the rest of the Geologic Drainage Systems team (Scott Hiers, Radmon Rice, and David Johns), and many other Watershed staff for field assistance.

References

Braun, C.L. and Grzyb, S.D. 2015. Streamflow gains and losses in the Colorado River in northwestern Bruent and southeastern San Saba Counties, Texas, 2012-14: U.S. Geological Survey Scientific Investigations Report 2015-5098, 32p.

City of Austin (COA). 1997. The Barton Creek report. City of Austin, Drainage Utility Department, Environmental Resources Management Division. Water Quality Report Series COA-ERM/ 1997. April 22, 1997. Austin, Texas.

Gary, M.O.; Gary, R.H.; and Hunt, B.B. 2011, Interconnection of the Trinity (Glen Rose) and Edwards Aquifers along the Balcones Fault Zone and Related Topics. Proceedings: Karst Conservation Initiative Meeting, Feb 17, 2011, Austin, Texas. Proceedings compiled July 2011.

Green, R. T.; Bertetti, F. P.; and Candelario, M. O. 2011. Edwards Aquifer – Upper Glen Rose Aquifer Hydraulic Interaction. *in* Gary, M. O., R. H. Gary, and B. B. Hunt, eds. Proceedings: Karst Conservation Initiative Meeting, Feb 17, 2011, Austin, Texas. Proceedings compiled July 2011.

Hunt, B.B.; Smith, B.A.; Gary, M.O.; Broun, A.S.; Wierman, D.A.; Watson, J.; and Johns, D. 2017. Surface-water and Groundwater Interactions in the Blanco River and Onion Creek Watersheds: Implications for the Trinity and Edwards Aquifers of Central Texas. Bulletin of the South Texas Geological Society, Vol. LVII, Issue 5, Jan 2017, pp. 33-53.

Nielsen-Gammon, J.:Holman, S.; Buley, A.; Jorgensen, S.: Escobedo, J.; Ott, C.; Dedrick, J; Van Fleet, A. 2021. Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036. Office of the Texas State Climatologist, Texas A&M University.

Smith, B. A., B. B. Hunt, A. G. Andrews, J. A. Watson, M. O. Gary, D. A. Wierman, and A. S. Broun, 2014, Hydrologic influences of the Blanco River on the Trinity and Edwards aquifers, Central Texas, USA, *in* B. Andreo, F. Carrasco, J. Duran, P. Jimenez, and J. LaMoreaux, eds., Hydrogeological and environmental investigations in karst systems: Environmental Earth Sciences, v. 1, p. 153–161.

Sontek/YSI Inc. 2007. FlowTracker Handheld ADV Technical Manual, Firmware Version 3.3, Software Version 2.20. San Diego, California. July 2007.

Turnipseed, D.P., and Sauer, V.B., 2010, Discharge measurements at gaging stations: U.S. Geological Survey Techniques and Methods book 3, chap. A8, 87 pp.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 30, 2024 12:37 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: 2024.01.29 Fitzhugh Neighbors-GEAA Comment Letter_Final3.pdf

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: jaime@txenvirolaw.com <jaime@txenvirolaw.com>
Sent: Monday, January 29, 2024 6:33 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Lauren Ice

EMAIL: jaime@txenvirolaw.com

COMPANY: Perales, Allmon & Ice, P.C.

ADDRESS: 1206 SAN ANTONIO ST
AUSTIN TX 78701-1834

PHONE: 5124696000

FAX:

COMMENTS: Please see the attached comments submitted on behalf of Fitzhugh Neighbors and GEAA.

PERALES, ALLMON & ICE, P.C.
ATTORNEYS AT LAW
1206 San Antonio Street
Austin, Texas 78701
(512) 469-6000 • (512) 482-9346 (facsimile)
info@txenvirolaw.com

Of Counsel:
David Frederick
Richard Lowerre
Vic McWherter

January 29, 2024

Laurie Gharis, Chief Clerk
Texas Commission on Environmental Quality
Office of the Chief Clerk, MC 105
P.O. Box 13087
Austin, Texas 78701-3087

Via TCEQ Online Comment Form

RE: Comments and Request for a Contested Case Hearing regarding the Application of Blizexas LLC, for Proposed TLAP No. WQ0016111001

Dear Ms. Gharis:

On behalf of Fitzhugh Neighbors and the Greater Edwards Aquifer Alliance ("GEAA"), I am submitting this comment letter and request for a contested case hearing regarding the Application of Blizexas LLC, for Proposed TLAP No. WQ0016111001 (hereinafter, the "Application"). These comments and hearing request are in addition to any other comments or hearing request offered by Fitzhugh Neighbors and GEAA. Both Fitzhugh Neighbors and GEAA may be contacted through my office at the address and telephone number indicated above.

I. Background

With this Application, the Applicant proposes to dispose of 12,000 gallons per day on average of domestic wastewater effluent, at a peak flow of 48,000 gallons per day, via subsurface area drip dispersal system ("SADDS"). According to the Application, the disposal area will be divided into six separate drip fields that will total 2.75 acres of public access area. Also, according to the Application, the wastewater treatment facility wills serve the "Rockingwall Ranch Event Venue," but little else. The Event Venue site is located on the north side of Fitzhugh Road at approximately 14820 Fitzhugh Road, Hays County, Texas.

II. Fitzhugh Neighbors and GEAA are "Affected Persons."

Fitzhugh Neighbors and GEAA satisfy TCEQ's rules regarding associational standing. That is, one or more members of each of the organization would have standing to request a hearing in their own right; the interests each organization seeks to protect are germane to their purpose; and neither the claim asserted nor the relief requested requires the participation of the individual members in the case.

Fitzhugh Neighbors is a non-profit organization whose purpose is to advocate for sustainable growth and development in the Fitzhugh Corridor and protect the natural environment of this Central Texas area. Fitzhugh Neighbors is a membership organization, and Sue and Tom Munns are members of Fitzhugh Neighbors. The Munns own property directly across from Fitzhugh Road of the Event Venue, which is the location of their homestead as well as the home of their children and grandchildren. The Munns spend significant time enjoying the outdoors, and though they live on rainwater, they also have a well on their property. They also enjoy spending time recreating in Barton Creek. Though the Munns have owned this property since the 1990s, they were not identified on the Applicant's affected landowners map.

GEAA is a 501(c)(3) nonprofit organization that promotes effective broad-based advocacy for the protection and preservation of the Edwards and Trinity Aquifers, their springs, watersheds, and the Texas Hill Country lands that sustain them. GEAA has multiple members who would be adversely affected by the Application.

III. General Comments

Subsurface Area Drip Dispersal Systems are governed under Title 30, Texas Administrative Code, Chapter 222. The purpose of Chapter 222 is four-fold:

> (1) maintain the quality of fresh water in the state to the extent consistent with the public health and welfare and the operation of existing industries;
>
> (2) promote the beneficial reuse of commercial, industrial, and municipal wastewater for the economic development of the state, thereby reducing the demand on the state's supply of fresh water;
>
> (3) prevent underground injection that may pollute fresh water; and
>
> (4) require the use of all reasonable methods to implement this policy.

30 Tex. Admin. Code § 222.1. For reasons provided below, the Application does not support the purposes of Chapter 222.

IV. Specific Comments

A. The Application does not demonstrate that surface water will be protected.

The Application acknowledges that the nearest watercourse to the disposal site to which rainfall runoff may flow is Barton Creek. Though the Application indicates that drainage from the site and surrounding areas flows generally from south to north towards Barton Creek, it does not adequately assess the drainage patterns in the area or the location of drainageways and tributaries to ensure that surface water will be protected. As discussed in more detail below, the Application also fails to account for seepage from drain fields into shallow groundwater areas and groundwater that is hydrologically connected to surface water. The result of the SADDS is that it will degrade water quality in Barton Creek and other area surface waters.

B. The Application does not demonstrate that groundwater will be protected.

The soil samples documented in the Application do not demonstrate that all the soils in the area are adequate for subsurface drip irrigation. In addition, the depth to rock and absorption,

combined with the likelihood of recharge features, makes these soils especially improper for drip irrigation, particularly subsurface drip which can malfunction or fail beneath the soil, meaning oversaturation goes unnoticed. The Application proposes 3 lysimeters for monitoring groundwater; however, given the sensitivity of the site and that the Application proposes six different drain fields, 3 lysimeters is not nearly enough. Neither is the location of the 3 lysimeters adequate for monitoring. Finally, it is not clear from the Application what the lysimeters will measure and how often they will record measurements. For these reasons, and many other discussed in more detail below, the Application fails to demonstrate that groundwater will be protected and should be denied.

C. The Application does not demonstrate the facility will have adequate capacity to protect surface water and groundwater.

Nowhere does the Application attempt to demonstrate how it calculated a 12,000 gpd average capacity. Chapter 222 directs an applicant to follow certain criteria as the basis to determine its wastewater design values, including peak flow. Applicant does not attempt to follow this criteria, and fails to explain the basis for deviating from the criteria or the basis for its own methodology. As a result, the capacity is highly unreliable.

The Application makes no effort to describe activities on the site that will produce domestic wastewater, (e.g., the number of bathrooms, kitchens, bar service, frequency of events, etc.). As guidance, Rule 217.32(a)(3), Table B.1. provides comparable estimates for a restaurant with bar or cocktail service for 5,000 people per day that could total more than six times what the Application estimates, and yet the Application provides no explanation for the calculations it used. Likewise, the Application provides no explanation for the assumption that the effluent will contain a BOD5 concentration of 540 mg/L. For this reason, the Application must be denied.

D. The Application does not demonstrate that the irrigation system will protect against stormwater run-on and runoff.

The Application indicates that a water balance was not performed. However, TCEQ Rule 222.83 requires that the application calculate the hydraulic application rate for each month of the year. According to TCEQ rules, a monthly water balance must be computed that include soil moisture storage. This is the only potentially reliable way to estimate when the maximum application rate is exceeded by predicting when rainfall and irrigation together will exceed the total of the available soil moisture storage, the actual water requirement of crop, and leaching. Without this water balance, the Application's calculations as to capacity, application rate, storage, and more crucial components are unreliable. Thus, the Application must be denied.

Rule 222.75 requires that an applicant develop and submit with the application, a site preparation plan that "illustrates" how site preparation will alleviate potential site-specific limitations and ensure suitability for the SADDS, which must include a site plan to minimize rainfall run-on and maximize rainfall runoff from the dispersal zones. The Applicant has merely provided a conclusory statement, but no helpful illustration. This is important because the public comments reveal a concern regarding impervious cover, runoff, proximity to Barton Creek, and connections between subsurface and groundwater in this area and surface water resources like Barton Creek. Though the Application indicates generally that runoff will be directed around drip fields by means of diversion berms "if necessary," there is no commitment or planning to ensure this occurs, and in fact, the site preparation plan and other scant site plans provided in the Application call into question whether this necessary site preparation could occur. Additionally, and pursuant to Rule 222.113, an applicant must also submit an engineering report that includes plans and specifications that includes the site topography, storm water run-on prevention and storm water runoff accommodation, but this has not been provided. As a result, the Application has failed

to demonstrate that the irrigation sites will be protected with rainfall run-on and run-off controls and the Application should be denied.

Finally, the Application indicates that 5% is the maximum slope on the property. There is nothing in the application that explains the basis for this statement, but nevertheless, the Application fails to provide how the irrigation areas will be divided into zones so that it will comply with the regulations, particularly how the dispersal zones will be designed so that they follow the contour of site and do not exceed 1% lateral slope. The Application also fails to provide the proposed line layout. In short, the Application does not meet the requirements of Rule 222.121 and must be denied.

E. The Application's Recharge Plan is deficient.

Pursuant to Rule 222.79, the Applicant must, at a minimum, have a licensed professional engineer or geoscientist conduct an on-site inspection to identify the presence or absence of recharge features. The Applicant's recharge feature plan indicates only generally that the assessment included "walking and driving across the property" but it does not provide any reliable description of how this assessment was conducted. Further, other landowners in the area have reported springs on their properties and other permeable features that could potentially serve as recharge features, meaning it seems unlikely that the Applicant's property contains no recharge features. Further, the Application indicates that buffer zones will be utilized if recharge features are discovered, but does not commit to any reliable assessment or to any buffers of any particular size. For these reasons, the current Recharge Feature Plan is unreliable and the Application should be denied.

F. The Application does not demonstrate that the facility will have adequate storage.

Though the Application proposes to 36,000 gallons of storage, as previously mentioned, it is not demonstrated that the design and peak flows are proper or that the drip fields are adequately sized according to both the flow and the area's water balance. Because of these deficiencies, the Application has also failed to demonstrate that storage is adequate pursuant to Rule 222.127.

G. The proposed facility will cause odors, algae growth, and other nuisance issues that will impair the ability of neighbors and others to use their property and enjoy Barton Creek.

All wastewater facilities cause odors and this Application has not demonstrated that its odor abatement measures will be effective. In addition, given the proximity of the disposal area to Barton Creek (in addition to other issues raised in this letter), it is also likely that nutrient-rich effluent will make its way to Barton Creek, a naturally nutrient-limited stream. This addition of nutrients, will cause algae to grow, which will impair water quality in Barton Creek and will impair the ability of people to enjoy the Creek in violation of Texas Surface Water Quality Standards.

H. The Application does not demonstrate compliance with TCEQ's Regionalization Policy.

The Application acknowledges that there are two other WWTPs within a three-mile radius, and though the Application provides letters to those entities, the Application does not indicate that those entities responded and indicated that they did not have the capacity to serve. This is not in compliance with TCEQ's instructions for completing the application or with TCEQ's Regionalization Policy.

I. Notice of the Application was improper and untimely.

Applicants for subsurface area drip dispersal system permits must comply with the public notice requirements found in Chapter 39. 30 Tex. Admin. Code § 222.33. The Application's "Affected Persons" map and notice list is plainly wrong. Between the properties labeled as Nos. 6 and 7 is a property that is entirely unlabeled. According to Hays CAD, this property is owned by

the Munns. It is not clear why the property is not labeled, but they have owned this property since the 1990s. According to the Application, the Munns would have failed to receive timely notice of this matter. A review of other adjacent properties reveals many more discrepancies between the property identified in the Application and the properties identified on Hays CAD. The Application does not explain these discrepancies, but it would seem that it is likely Property No. 2 is improperly labeled (no longer owned by 2W Austin Development LLC, but has since May 2021 been owned by an entity called Half-Ton LLC) and Property No. 7 is improperly labeled (no longer owned by 2W Austin Development LLC, but since May of 2021, been owned by Jason and Rachel Neyland). The Application is stamped as received on February 17, 2022 and there is no explanation for why these properties were incorrectly identified, but it is possible other property were also improperly identified. For these reasons, the Application does not demonstrate that notice was proper and should be returned.

J. The Application does not demonstrate that Applicant owns all the property necessary to construct the facilities.

According to Hays CAD, another entity entirely owns property where the buildings and source of much of the wastewater will originate is located and it is not clear from any site plan or line layout that the Applicant owns the property necessary to locate the facility. For these reasons, the Application should be denied.

V. Conclusion

For the reasons described above, Fitzhugh Neighbors and GEAA urge the Commission to deny Blizexas LLC's Application for TLAP No. WQ0016111001. In the alternative, the Fitzhugh Neighbors and GEAA request a contested case hearing with regard to the Application.

Please contact me with any questions.

Respectfully submitted,

/s/ Lauren Ice
Lauren Ice
State Bar No. 24092560
lauren@txenvirolaw.com
PERALES, ALLMON & ICE, P.C.
1206 San Antonio Street
Austin, Texas 78701
512-469-6000 (t)
512-482-9346 (f)

Counsel for Fitzhugh Neighbors and Greater Edwards Aquifer Alliance

8

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Lauren Ice

Mailing Address: 1206 San Antonio St., Austin 78701

Physical Address (if different): _____

City/State: _____ **Zip:** _____

This information is subject to public disclosure under the Texas Public Information Act

Email: lauren@txenvirolaw.com

Phone Number: (512) 469-6000

- Are you here today representing a municipality, legislator, agency, or group? ☑ Yes ☐ No

  If yes, which one? Fitzhugh Neighbors and Greater Edwards Aquifer Alliance

☐ **Please add me to the mailing list.**

☑ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: LAUREN ICE

Mailing Address: 1206 SAN ANTONIO ST., AUSTIN, TX 78701

Physical Address (if different): _____

City/State: _____ **Zip:** _____

This information is subject to public disclosure under the Texas Public Information Act

Email: lauren@txenvirolaw.com

Phone Number: (512) 469-6000

- Are you here today representing a municipality, legislator, agency, or group? ☑ Yes ☐ No

  If yes, which one? Fitzugh Neighbors + GEAA

☐ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☒ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.** (I also submitted oral comments on different form.)

(Written comments may be submitted at any time during the meeting)

(over)

Please give this form to the person at the information table. Thank you.

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

I learned tonight that required storage has been increased to 80,000 gallons. Though it may constitute more than 36,00 gallon and more than 3 days, based on information in the Application and permit file, it remains inadequate.

The City of Austin has conducted studies that demonstrate likelihood that TLAPs contaminate nearby surface waters. There is no information in the Application that demonstrates this type of contamination will not occur and there is nothing that demonstrates this type of contamination will be caught, ~~[illegible]~~ making the permit prohibition on a discharge to a surface water of the State as an unenforceable permit provision.

The imposition of special conditions in the permit is not a permissable way to address information that is lacking in the Application. There are a lot of special conditions, but these do not provide the benefit that comes with actually assessing the information required. And it denies the public access to this information

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 30, 2024 12:32 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Comments for TCEQ Permit WQ0016111001.docx

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: greg.jenkins1958@gmail.com <greg.jenkins1958@gmail.com>
Sent: Monday, January 29, 2024 5:11 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Greg Jenkins

EMAIL: greg.jenkins1958@gmail.com

COMPANY:

ADDRESS: 13800 TRAIL DRIVER
AUSTIN TX 78737-9524

PHONE: 7138281184

FAX:

COMMENTS: • We have concerns about the Draft Permit of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001, including the impacts of disposal and runoff on: • Groundwater and surface water contamination • Impact on local wildlife • Impact on aquifers • Waste odors. • We write to state our objections to the proposed TLAP Permit No. WQ0016111001 to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersections of Crumley Ranch Road, Trautwein Road, and Fitzhugh Road in Hays County, Texas. Its disposal area is located in the Edwards Aquifer Contributing Zone above Barton Creek. • Our house is at 13800 Trail Driver Street, Austin, TX 78737, almost exactly 2 miles from the proposed concert venue treatment facility. When this venue is active, we will be able to hear the noise of concerts and activities and see the lighting from our house. It is quite possible that it will affect aquifer levels that could result in our well going dry. • We have legitimate concerns about the topography of the proposed site, which is directly uphill from Barton Creek where it intersects with Fitzhugh Road. The difference in elevation from the treatment facility to Barton Creek is over 140 feet, mostly uninterrupted downhill terrain. In addition, the properties to the north of the proposed site are also downhill and will likely be affected by runoff. • Other irrigation fields in the area have experienced numerous problems, including: o Poor soils unable to absorb the large amounts of water o Runoff of effluent from saturated irrigation fields o Insufficient storage capacity to store effluent when soils are saturated, and the three days of storage noted in the draft permit may not be sufficient especially when the soil is saturated due to heavy rains over a period of days • Similarly permitted facilities in Hays County have failed on occasion, often resulting in untreated wastewater flowing into local streams. • There have also been a number of cases where sanitation at music venues became overwhelmed in wet weather, in some cases causing the spread of disease • What plans are in place to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on Barton Creek, especially given that Barton Creek is almost directly downhill of the site? • We are concerned about the potential impact of the site's operations and the proposed land application of wastewater next to Barton Creek and the waters running into Barton Creek. • The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life. • We have concerns about the amount of wastewater that will be generated at the venue as there is limited information about the number of concerts per week to be held at Rockingwall. o It seems that information must be made available to determine critical technical details accurately o The occupancy/capacity of the venue is also critical to know • We have concerns about runoff, locations of the drip fields, and size of the property relative to the requirements to properly manage the TLAP permit. o Blizexas should be required to disclose planned locations for parking lots and total amount of impervious cover from all impervious surfaces to ensure that engineering assumptions are correct under the draft permit. o Has TCEQ conducted a site visit to determine if the property is large enough to accommodate all requirements? o If not, what is TCEQ's basis for believing that the proposed TLAP facility will not harm Barton Creek or adjacent properties? • We have concerns regarding the placement of waste within the Edwards Aquifer Contributing Zone. o Blizexas has announced plans to pump up to 12,000 gallons per day from a well on the site of this property, to operate the wastewater treatment system. o The aquifers in this area are already very overtaxed, and the Middle Trinity aquifer has no active recharge zone. If this well taps into the middle Trinity (which provides water for my property), then it will dry up this zone very quickly. o Regardless of which aquifer supplies the well, it has a very high potential to cause the wells in the area to go dry very quickly, which we are already experiencing in this area. • We have concerns about runoff, locations of the drip fields, and the size of the property relative to the requirements to properly manage the TLAP permit. • The thin soil characteristic of the disposal area poses a potential risk to not only the Edwards Aquifer but also the Trinity Aquifer, as many neighboring property owners rely on the Trinity as their sole source of water for domestic and commercial use. • The soil in the proposed treatment system is very thin, usually less than 1 foot above the limestone bedrock in the area. It has little to no capacity to absorb the 12,000 gallons of effluent being produced daily by the wastewater facility. • It seems that a proposed groundwater well is identified in the application. What is the capacity of the well? Is the well currently permitted with the Hays Trinity Groundwater Conservation District? Is there enough potential water production to maintain grass production as required under the TLAP permit? And is this enough water for fire-control purposes? • Another possible source of water to run the wastewater facility proposed by Blizexas is to truck in 12,000 gallons of water per day, This works out to 50 tons of water per day being carried over the substandard roads leading to the proposed venue, and has the potential to severely damage these roads and bridges in a short period of time. As the road damage increases, this will likely limit the ability to supply enough water using this method, and the wastewater system will likely become inoperable as a result. •

We request that Blizexas be required to submit an Edwards Aquifer Contributing Zone plan if not already submitted. • Blizexas only proposes buffer zones for odor control 150 feet from the property line. o Can TCEQ ensure that Blizexas's sludge solids management plan is sufficient to protect neighboring properties from odors from the wastewater system? o Also, is there adequate capacity for Wastewater Residuals Management to handle offsite disposal under their current permit? • The plans for the proposed facility show an amphitheater with the stage facing north within a few hundred feet of Shield Ranch, a well-known wildlife conservation area. The noise from amplified music for multiple nights each week will most certainly drive the wildlife away from this area and prevent their return. While this is not directly related to the wastewater treatment system, it is certainly a huge factor in the environmental quality of the area and should be considered by the Commission on Environmental Quality. A significant reduction in wildlife will result in multiple environmental impacts. • In addition, the powerful public address system used for such concerts will result in considerable noise pollution throughout the area, especially up and down the valley surrounding nearby Barton Creek. • If this application is indeed approved by the TCEQ, then we are requesting a contested hearing as a result.

Comments on Blizexas TLAP Permit WQ0016111001
In response to TCEQ Notice of Public Meeting issued on 12/15/2023

- We have concerns about the Draft Permit of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001, including the impacts of disposal and runoff on:
  - Groundwater and surface water contamination
  - Impact on local wildlife
  - Impact on aquifers
  - Waste odors.

- We write to state our objections to the proposed TLAP Permit No. WQ0016111001 to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersections of Crumley Ranch Road, Trautwein Road, and Fitzhugh Road in Hays County, Texas. Its disposal area is located in the Edwards Aquifer Contributing Zone above Barton Creek.

- Our house is at 13800 Trail Driver Street, Austin, TX 78737, almost exactly 2 miles from the proposed concert venue treatment facility. When this venue is active, we will be able to hear the noise of concerts and activities and see the lighting from our house. It is quite possible that it will affect aquifer levels that could result in our well going dry.

Disposal and runoff

- We have legitimate concerns about the topography of the proposed site, which is directly uphill from Barton Creek where it intersects with Fitzhugh Road. The difference in elevation from the treatment facility to Barton Creek is over 140 feet, mostly uninterrupted downhill terrain. In addition, the properties to the north of the proposed site are also downhill and will likely be affected by runoff.

- Other irrigation fields in the area have experienced numerous problems, including:
  - Poor soils unable to absorb the large amounts of water
  - Runoff of effluent from saturated irrigation fields
  - Insufficient storage capacity to store effluent when soils are saturated, and the three days of storage noted in the draft permit may not be sufficient especially when the soil is saturated due to heavy rains over a period of days

- Similarly permitted facilities in Hays County have failed on occasion, often resulting in untreated wastewater flowing into local streams.

- There have also been a number of cases where sanitation at music venues became overwhelmed in wet weather, in some cases causing the spread of disease

- What plans are in place to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on Barton Creek, especially given that Barton Creek is almost directly downhill of the site?

Surface water

- We are concerned about the potential impact of the site's operations and the proposed land application of wastewater next to Barton Creek and the waters running into Barton Creek.

Comments on Blizexas TLAP Permit WQ0016111001
In response to TCEQ Notice of Public Meeting issued on 12/15/2023

- The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life.

- We have concerns about the amount of wastewater that will be generated at the venue as there is limited information about the number of concerts per week to be held at Rockingwall.
    - It seems that information must be made available to determine critical technical details accurately
    - The occupancy/capacity of the venue is also critical to know

- We have concerns about runoff, locations of the drip fields, and size of the property relative to the requirements to properly manage the TLAP permit.
    - Blizexas should be required to disclose planned locations for parking lots and total amount of impervious cover from all impervious surfaces to ensure that engineering assumptions are correct under the draft permit.
    - Has TCEQ conducted a site visit to determine if the property is large enough to accommodate all requirements?
    - If not, what is TCEQ's basis for believing that the proposed TLAP facility will not harm Barton Creek or adjacent properties?

Groundwater Impacts

- We have concerns regarding the placement of waste within the Edwards Aquifer Contributing Zone.
    - Blizexas has announced plans to pump up to 12,000 gallons per day from a well on the site of this property, to operate the wastewater treatment system.
    - The aquifers in this area are already very overtaxed, and the Middle Trinity aquifer has no active recharge zone. If this well taps into the middle Trinity (which provides water for my property), then it will dry up this zone very quickly.
    - Regardless of which aquifer supplies the well, it has a very high potential to cause the wells in the area to go dry very quickly, which we are already experiencing in this area.

- We have concerns about runoff, locations of the drip fields, and the size of the property relative to the requirements to properly manage the TLAP permit.

- The thin soil characteristic of the disposal area poses a potential risk to not only the Edwards Aquifer but also the Trinity Aquifer, as many neighboring property owners rely on the Trinity as their sole source of water for domestic and commercial use.
- The soil in the proposed treatment system is very thin, usually less than 1 foot above the limestone bedrock in the area. It has little to no capacity to absorb the 12,000 gallons of effluent being produced daily by the wastewater facility.

- It seems that a proposed groundwater well is identified in the application. What is the capacity of the well? Is the well currently permitted with the Hays Trinity Groundwater Conservation District? Is there enough potential water production to maintain grass production as required under the TLAP permit? And is this enough water for fire-control purposes?

- Another possible source of water to run the wastewater facility proposed by Blizexas is to truck in 12,000 gallons of water per day, This works out to 50 tons of water per day being carried

over the substandard roads leading to the proposed venue, and has the potential to severely damage these roads and bridges in a short period of time. As the road damage increases, this will likely limit the ability to supply enough water using this method, and the wastewater system will likely become inoperable as a result.

- We request that Blizexas be required to submit an Edwards Aquifer Contributing Zone plan if not already submitted.

Odor

- Blizexas only proposes buffer zones for odor control 150 feet from the property line.
  - Can TCEQ ensure that Blizexas's sludge solids management plan is sufficient to protect neighboring properties from odors from the wastewater system?
  - Also, is there adequate capacity for Wastewater Residuals Management to handle offsite disposal under their current permit?

Environment

- The plans for the proposed facility show an amphitheater with the stage facing north within a few hundred feet of Shield Ranch, a well-known wildlife conservation area. The noise from amplified music for multiple nights each week will most certainly drive the wildlife away from this area and prevent their return. While this is not directly related to the wastewater treatment system, it is certainly a huge factor in the environmental quality of the area and should be considered by the Commission on Environmental Quality. A significant reduction in wildlife will result in multiple environmental impacts.
- In addition, the powerful public address system used for such concerts will result in considerable noise pollution throughout the area, especially up and down the valley surrounding nearby Barton Creek.

Contested Hearing

- If this application is indeed approved by the TCEQ, then we are requesting a contested hearing as a result.

Submitted sincerely,

Greg and Debbie Jenkins
13800 Trail Driver St.
Austin, TX 78737
713-828-1184

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Greg Jenkins

Mailing Address: 13800 Trail Driver St. Austin TX 78737

Physical Address (if different): _____

City/State: Austin TX **Zip:** 78737

This information is subject to public disclosure under the Texas Public Information Act

Email: greg.jenkins1958@gmail.com

Phone Number: (713) 828-1184

- Are you here today representing a municipality, legislator, agency, or group? ☑ Yes ☐ No

  If yes, which one? Big Country Subdivision

☑ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☑ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Debbie Jenkins

Mailing Address: 13800 Trail Driver St

Physical Address (if different): _____

City/State: Austin **Zip:** 78737

This information is subject to public disclosure under the Texas Public Information Act

Email: _____

Phone Number: (832) 445-4456

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☒ No

  If yes, which one? _____

☐ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Comments on Blizexas TLAP Permit WQ0016111001
In response to TCEQ Notice of Public Meeting issued on 12/15/2023

- We have concerns about the Draft Permit of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001, including the impacts of disposal and runoff on:
  - Groundwater and surface water contamination
  - Impact on local wildlife
  - Impact on aquifers
  - Waste odors.

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

H

- We write to state our objections to the proposed TLAP Permit No. WQ0016111001 to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersections of Crumley Ranch Road, Trautwein Road, and Fitzhugh Road in Hays County, Texas. Its disposal area is located in the Edwards Aquifer Contributing Zone above Barton Creek.

- Our house is at 13800 Trail Driver Street, Austin, TX 78737, almost exactly 2 miles from the proposed concert venue treatment facility. When this venue is active, we will be able to hear the noise of concerts and activities and see the lighting from our house. It is quite possible that it will affect aquifer levels that could result in our well going dry.

Disposal and runoff

- We have legitimate concerns about the topography of the proposed site, which is directly uphill from Barton Creek where it intersects with Fitzhugh Road. The difference in elevation from the treatment facility to Barton Creek is over 140 feet, mostly uninterrupted downhill terrain. In addition, the properties to the north of the proposed site are also downhill and will likely be affected by runoff.

- Other irrigation fields in the area have experienced numerous problems, including:
  - Poor soils unable to absorb the large amounts of water
  - Runoff of effluent from saturated irrigation fields
  - Insufficient storage capacity to store effluent when soils are saturated, and the three days of storage noted in the draft permit may not be sufficient especially when the soil is saturated due to heavy rains over a period of days

- Similarly permitted facilities in Hays County have failed on occasion, often resulting in untreated wastewater flowing into local streams.

- There have also been a number of cases where sanitation at music venues became overwhelmed in wet weather, in some cases causing the spread of disease

- What plans are in place to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on Barton Creek, especially given that Barton Creek is almost directly downhill of the site?

Surface water

- We are concerned about the potential impact of the site's operations and the proposed land application of wastewater next to Barton Creek and the waters running into Barton Creek.

Comments on Blizexas TLAP Permit WQ0016111001
In response to TCEQ Notice of Public Meeting issued on 12/15/2023

- The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life.

- We have concerns about the amount of wastewater that will be generated at the venue as there is limited information about the number of concerts per week to be held at Rockingwall.
  - It seems that information must be made available to determine critical technical details accurately
  - The occupancy/capacity of the venue is also critical to know

- We have concerns about runoff, locations of the drip fields, and size of the property relative to the requirements to properly manage the TLAP permit.
  - Blizexas should be required to disclose planned locations for parking lots and total amount of impervious cover from all impervious surfaces to ensure that engineering assumptions are correct under the draft permit.
  - Has TCEQ conducted a site visit to determine if the property is large enough to accommodate all requirements?
  - If not, what is TCEQ's basis for believing that the proposed TLAP facility will not harm Barton Creek or adjacent properties?

Groundwater Impacts

- We have concerns regarding the placement of waste within the Edwards Aquifer Contributing Zone.
  - Blizexas has announced plans to pump up to 12,000 gallons per day from a well on the site of this property, to operate the wastewater treatment system.
  - The aquifers in this area are already very overtaxed, and the Middle Trinity aquifer has no active recharge zone. If this well taps into the middle Trinity (which provides water for my property), then it will dry up this zone very quickly.
  - Regardless of which aquifer supplies the well, it has a very high potential to cause the wells in the area to go dry very quickly, which we are already experiencing in this area.

- We have concerns about runoff, locations of the drip fields, and the size of the property relative to the requirements to properly manage the TLAP permit.

- The thin soil characteristic of the disposal area poses a potential risk to not only the Edwards Aquifer but also the Trinity Aquifer, as many neighboring property owners rely on the Trinity as their sole source of water for domestic and commercial use.
- The soil in the proposed treatment system is very thin, usually less than 1 foot above the limestone bedrock in the area. It has little to no capacity to absorb the 12,000 gallons of effluent being produced daily by the wastewater facility.

- It seems that a proposed groundwater well is identified in the application. What is the capacity of the well? Is the well currently permitted with the Hays Trinity Groundwater Conservation District? Is there enough potential water production to maintain grass production as required under the TLAP permit? And is this enough water for fire-control purposes?

- Another possible source of water to run the wastewater facility proposed by Blizexas is to truck in 12,000 gallons of water per day, This works out to 50 tons of water per day being carried

over the substandard roads leading to the proposed venue, and has the potential to severely damage these roads and bridges in a short period of time. As the road damage increases, this will likely limit the ability to supply enough water using this method, and the wastewater system will likely become inoperable as a result.

- We request that Blizexas be required to submit an Edwards Aquifer Contributing Zone plan if not already submitted.

Odor

- Blizexas only proposes buffer zones for odor control 150 feet from the property line.
  - Can TCEQ ensure that Blizexas's sludge solids management plan is sufficient to protect neighboring properties from odors from the wastewater system?
  - Also, is there adequate capacity for Wastewater Residuals Management to handle offsite disposal under their current permit?

Environment

- The plans for the proposed facility show an amphitheater with the stage facing north within a few hundred feet of Shield Ranch, a well-known wildlife conservation area. The noise from amplified music for multiple nights each week will most certainly drive the wildlife away from this area and prevent their return. While this is not directly related to the wastewater treatment system, it is certainly a huge factor in the environmental quality of the area and should be considered by the Commission on Environmental Quality. A significant reduction in wildlife will result in multiple environmental impacts.
- In addition, the powerful public address system used for such concerts will result in considerable noise pollution throughout the area, especially up and down the valley surrounding nearby Barton Creek.

Contested Hearing

- If this application is indeed approved by the TCEQ, then we are requesting a contested hearing as a result.

Submitted sincerely,

Greg and Debbie Jenkins
13800 Trail Driver St.
Austin, TX 78737
713-828-1184

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Wednesday, April 2, 2025 4:32 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Request for Reconsideration of the Executive Director's Decision and Response to Comments on Blizexas, LLC Proposed Permit No. WQ0016111001
Attachments: Blizexas WQ0016111001 Request for Reconsideration.pdf

RFR

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: CHIEFCLK <chiefclk@tceq.texas.gov>
Sent: Wednesday, April 2, 2025 2:31 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: FW: Request for Reconsideration of the Executive Director's Decision and Response to Comments on Blizexas, LLC Proposed Permit No. WQ0016111001

Laurie Gharis
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-1835
Cell Phone: 737-263-9116

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: Champlin, Kaela <Kaela.Champlin@austintexas.gov>
Sent: Wednesday, April 2, 2025 2:16 PM
To: CHIEFCLK <chiefclk@tceq.texas.gov>
Cc: Deba Dutta <Deba.Dutta@tceq.texas.gov>; Johnston, Liz <Liz.Johnston@austintexas.gov>
Subject: Request for Reconsideration of the Executive Director's Decision and Response to Comments on Blizexas, LLC Proposed Permit No. WQ0016111001

Good afternoon,

Attached, please find the City of Austin's Request for Reconsideration of the Executive Director's Decision and Response to Comments on Blizexas, LLC Proposed Permit No. WQ0016111001.

Thank you,

Kaela Champlin (she/her)
Environmental Program Coordinator
Watershed Protection Department
512-974-3443 | cell: 737-230-3786
kaela.champlin@austintexas.gov

City of Austin
Founded by Congress, Republic of Texas, 1839
Watershed Protection Department
P.O. Box 1088, Austin, Texas 78767

April 2, 2025

Laurie Gharis, Chief Clerk
Office of the Chief Clerk
Texas Commission on Environmental Quality
P. O. Box 13087, MC-105
Austin, Texas 78711-3087

VIA ELECTRONIC SUBMITTAL

SUBJECT: Request for Reconsideration of the Executive Director's Decision and Response to Comments on Blizexas, LLC Proposed Permit No. WQ0016111001 and the Executive Director's preliminary decision on the application

Dear Ms. Gharis:

By this letter, the City of Austin (City) submits its Request for Reconsideration of the Executive Director's Decision and Response to Comments (RTC) on the application by Blizexas, LLC (Applicant) for a new Texas Land Application Permit (TLAP), TCEQ Permit No. WQ0016111001, and the Executive Director's preliminary decision on the application pursuant to 30 Texas Administrative Code §55.201(e). These comments are in addition to those previously submitted on behalf of the City of Austin on January 29, 2024, which are enclosed with this letter.

The City recently purchased a conservation easement for water quality and quantity protection in partnership with Shield Ranch on December 11, 2024, after the close of the public comment period. The property is immediately adjacent to and downgradient from the Applicant's proposed irrigation fields. Both the irrigation fields and the adjacent area, including the Shield Ranch property where the City's conservation easement is located, are environmentally sensitive areas where the City is actively working to protect water quality and endangered species. Additionally, the City owns property and other conservation easements in the Barton Creek watershed. These properties are also environmentally sensitive areas that provide habitat for migratory songbirds, including the federally-protected Golden-cheeked warbler, and protect water quality and quantity in the Barton Creek watershed and the Edwards Aquifer.

The City respectfully requests reconsideration of the following issues raised in its January 19, 2024 written comments because the TLAP as proposed would likely harm the environment in the irrigation fields and on the City's conservation easement, violating 30 TAC 309.20, 307.7, and 30 TAC 222.151.

The City's primary concerns focus on addressing environmental issues and ensuring regulatory compliance. Specifically, the City is concerned that the proposed TLAP could negatively impact environmentally sensitive areas and diminish the value of our adjacent conservation easement due to:

1. Inadequate monitoring of groundwater quality below the wastewater application site; and

The City of Austin is committed to compliance with the Americans with Disabilities Act.
Reasonable modifications and equal access to communications will be provided upon request.

2. The risk of nutrient contamination, including nitrates, Escherichia coli, and dissolved solids, seeping into surface waters and the shallow groundwater system.

The following three comments are specific examples, but many instances of comments from the City's January 19, 2024 written comments were not adequately or directly addressed in the Executive Director's RTC. We respectfully request that the TCEQ provide clear and complete, point-by-point responses to all of the City's written comments as well as a copy of the revised draft permit.

1. Monitoring of Actual Irrigation Rates: The City requested monitoring of actual irrigation rates. The TCEQ responded that the permit includes a blanket prohibition on wastewater percolation (Special Provision 15) and requires monitoring of groundwater quality through lysimeters (Special Provision 9). However, neither provision addresses the need to monitor actual irrigation rates, particularly given the venue's variability in flow between peak use during concerts and dormancy on other days. The City requests an additional Special Provision requiring daily monitoring of irrigation rates and the locations of the irrigation zones being used.

2. Effluent Quality Standards: The City requested that effluent quality meet the level required for subsurface area drip dispersal systems (SADDS) with public access. The draft permit (dated June 30, 2023) proposed effluent limits of 20 mg/L BOD and 20 mg/L TSS, but these limits are insufficient for environmentally sensitive areas and fail to meet statewide requirements under 30 TAC 309.4. The RTC states in Response 12 that the draft permit includes the more stringent effluent set of 10 mg/L BOD and 15 mg/L TSS proposed by the Applicant in their application, but an updated draft permit reflecting these limits was not provided as part of the response. More protective limits paired with a superior treatment train that includes nitrogen removal via combined nitrification and denitrification, such as that in use at the Headwaters MUD permit (WQ0014587001):

    - 5 mg/L BOD
    - 5 mg/L TSS
    - 2 mg/L NH_3-N
    - 1 mg/L TP
    - and a reporting requirement for TN would better protect the area and the City's conservation easement. The City requests that effluent limits for similarly situated TLAP (SADDS) permits align with these more protective standards to ensure effective water management and environmental stewardship.

    Furthermore, the City has conducted several field monitoring studies of reclaimed water irrigation systems in areas with thicker soils better suited to the attenuation of treated effluent and found detectable impacts in springs and surface waters downgradient from reclaimed irrigation areas. Reports of our findings from these studies were attached to our initial comments January 19, 2024. We request that the Executive Director use their discretion to consider more stringent effluent limits based on these findings and in the interest of consistency with other SADDS limits in the Edwards Aquifer Contributing and Recharge zones.

3. Adequacy of Storage Design: The City requested that the Applicant or TCEQ apply a daily water balance using long-term meteorological data and the proposed operating plan for drip irrigation to confirm the adequacy of the 3-day storage requirement in the draft permit. Given the high volumes of wastewater during peak operation associated with a concert venue and the sensitivity of this area, we believe a larger storage capacity may be warranted. The Headwaters MUD permit includes a 7-day storage capacity requirement.

The City emphasizes the need for discretion and due diligence from the Executive Director to prioritize the protection of environmentally sensitive areas in the Barton Creek watershed and adjacent to the Shield Ranch conservation easement. These measures not only ensure compliance with regulatory standards but also proactively safeguard natural resources, water quality, and endangered species habitats.

The City also notes that staff were given insufficient time to review the RTC as we did not receive the response until March 10, 2025. The City requests additional time to determine if we wish to seek a contested case hearing.

Thank you for your consideration. If you have questions, please contact me at Liz.Johnston@austintexas.gov and Kaela.Champlin@austintexas.gov.

Sincerely,

Liz Johnston

Liz Johnston
Interim Environmental Officer
Watershed Protection Department
City of Austin

Enclosure: January 29, 2024 City of Austin Comment Letter

cc: Deba P. Dutta, P.E., TCEQ Municipal Permits MC-148

City of Austin
Founded by Congress, Republic of Texas, 1839
Watershed Protection Department
P.O. Box 1088, Austin, Texas 78767

January 29, 2024

Laurie Gharis, Chief Clerk
Office of the Chief Clerk
Texas Commission on Environmental Quality
P. O. Box 13087, MC-105
Austin, Texas 78711-3087

VIA ELECTRONIC SUBMITTAL

SUBJECT: Submittal of Written Comments
Blizexas LLC - Rockingwall Ranch Proposed Permit No. WQ0016111001

Dear Ms. Gharis:

By this letter, the City of Austin (City) submits its written public comments regarding the application of Blizexas LLC for a new Texas Land Application Permit (TLAP), and Draft Permit No. WQ0016111001. The City submits these comments because the environmental sensitivity of the area subject to this permit is not adequately addressed in the application and draft permit. This letter also provides information on the potential impacts to water quality in similar settings for use by TCEQ in modifying the draft permit. Although a discharge permit is clearly not appropriate for this area, and a subsurface area drip dispersal system (SADDS) may be the best alternative, many improvements to the draft permit can be made to protect water quality. The City can be reached by mailing correspondence to my address on this letterhead and by telephone to my direct number, (512) 974- 2212.

The area to be used for land application of treated municipal wastewater covered by the proposed TLAP, Permit No. WQ0016111001 is in the Edwards Aquifer Contributing Zone and has the potential to impact surface waters if partially treated effluent is released to shallow groundwater seeps and springs in tributaries. Specifically, the SADDS areas likely drain into tributaries of Barton Creek upstream from the Barton Springs Segment of the Edwards Aquifer. The City has conducted several field monitoring studies of similar systems in areas with thicker soils better suited to the attenuation of treated effluent and found detectable impacts in springs and surface waters downgradient from reclaimed irrigation areas. We have attached reports of these studies for your review (Attachment 1 – Reclaimed water irrigation water quality impact assessments). Of primary concern are nutrient impacts to algae growth in these surface waters. The City has also conducted gain/loss studies in Barton Creek downstream from the proposed permit. These indicate that the reaches downstream are gaining flow from shallow groundwater discharge which could be hydrologically connected to the SADDS areas. Our recent report describing these findings is attached (Attachment 2 – Upper Barton Creek Gain/Loss Study at Shield Ranch). The combined weight of evidence calls for more stringent permit requirements in these sensitive areas.

The City requests the following points of concern be addressed in the updated draft permit and mitigation practices defined and implemented prior to initiation of wastewater effluent irrigation. With these improvements and attention to operation and maintenance, discharges to the groundwater system and surface waters can be minimized. Additionally, we would like to work with the applicant and TCEQ to design a monitoring plan for the site that would provide data on the impacts to water quality downstream from ongoing operation of the facility. The monitoring lysimeters proposed in

The City of Austin is committed to compliance with the Americans with Disabilities Act.
Reasonable modifications and equal access to communications will be provided upon request.

the application are a good start, but additional monitoring is warranted. There is currently limited monitoring data available for SADDS systems in marginal soils in the Barton Springs Zone.

We would appreciate the opportunity to review the revised draft permit with TCEQ responses to comments incorporated.

A. Soils

Comment: Soils in the drip dispersal areas are Brackett - Rock outcrop - Comfort complex BtD and Doss silty clay DoC as shown in the application. The Comfort soils are a shallow complex of extremely stony clay and gravelly clay and gravelly clay loam over limestone bedrock. These soils have severe limitations for treatment or disposal of wastewater effluent. The Brackett Soils in the proposed irrigation areas also have severe limitations for sanitary facilities and water management of shallow depth to rock, large stones, and slow percolation. The Doss soils have limitations for shallow depth to bedrock, shallow rooting zones, and slow percolation (USDA soil survey for Hays County). In the permit application all dispersal drip field soils are represented by one composite sample for each depth fraction. Given that these soils are likely to be very heterogenous, further sampling is warranted. All these conditions combined with the sensitivity of the watershed require attention to design and construction of the dispersal system beyond what is required in other areas of the state where the natural soils are more suitable for nutrient uptake.

Recommended Changes:

- Require maintenance of a 12-inch minimum soil depth of suitable soils below the dispersal system to sustain a viable root zone, support crop growth and maximize uptake of wastewater effluent and nutrients.
- Require monitoring of actual irrigation application rates adequate for uptake of wastewater effluent andnutrients, such that percolation below the root zone does not occur.
- Eliminate bedrock outcrop areas from total irrigation acreage. Determine if remaining areas are adequate to meet the required application rate.
- Imported soils will likely be necessary to reach the specified vertical separation distances below and above the drip dispersal system. Built drawings indicating where soil is added should be included as a permit requirement.
- Periodic reevaluation of the soil depth and quality over time should be incorporated into special conditions in the permit.

B. Geology

Comment: The Upper Glen Rose Limestone is present at the surface on-site and throughout the area, including in the channel of nearby Barton Creek. The Glen Rose consists of hard limestone alternating with more marly beds which weather to form a characteristic stair-step topographic profile on hills. While not as aggressively weathered as the overlying and more well-known Edwards Group, the Glen Rose has substantial karst development and hosts the Trinity Aquifer which provides water to thousands of people in Central Texas in addition to supplying the springs that sustain baseflow in Upper Barton Creek and its tributaries in this area. The Groundwater Quality Report submitted with the permit application noted impacts to wells were unlikely but did not mention potential impacts to nearby springs. The tributary to Barton Creek located directly north of the SADDS areas had measurable flow into Barton Creek in June and July of 2019 (Sydow et al. 2024).

Recommended Change:

- Inspect, review, and evaluate surface and subsurface rock features prior to installation of drip irrigation system and construction of treatment facilities, storage pond, and all underground utilities.

C. Treatment Plant and Effluent Limits

Comment: The treatment system is proposed to be a conventional activated sludge plant including flow equalization, bar screens, an aeration basin, final clarifier, a tertiary media filter and chlorine contact chamber. The application stated that the plant is capable of effluent limits of 10 mg/L BOD 15 mg/L TSS (TCEQ-10054 pg 25 of 80). In addition, the design criteria used in calculations indicates the plant will be capable of an effluent limit of 10 mg/L TSS (TCEQ-10054 Attachment 14). However, the draft permit is written for less stringent limits of 20 mg/L BOD and 20 mg/L TSS (Draft WQ0016111001 pg 2). The subsurface area drip dispersal system would operate better at the designed effluent of 10 mg/L BOD and 10 mg/L TSS with fewer soil clogging and maintenance problems than the draft permit of 20 mg/L BOD and 20 mg/L TSS. Although this limit may be appropriate in other parts of the state, more stringent limits would be warranted in this sensitive area with the noted soil limitations. We would recommend that the design criteria be used as the effluent limits. We would also recommend that modifications be considered to the plant to maximize the nutrient removal capabilities. Low cost and operational changes to conventional activated sludge treatment should be considered such as those recommended in Water Research Foundation Project No. 4973 (Neethling, Falk, and Evans, 2023).

D. Effluent Irrigation and Management Plan

Comment: While the default effluent application rate of 0.1 gpd/ft^2 appears to be low enough on an annual basis, and the vegetative cover is capable of necessary nutrient uptake, no storage or water balance calculations are required for SADDS systems. Given the sensitivity of the area and the improvements in hydrological and water quality models over the years since the SADDS rules were written, it would be warranted to spend more time evaluating the actual performance of the system. Like spray irrigation, a daily water balance using long-term hydrological data would provide some confidence that no discharges could be expected. Alternately, any unit area models such as GLEAMS or watershed models such as SWAT could be used to do the same accounting. Even if it is not appropriate for the applicant to provide this, the TCEQ could incorporate such models into their review process.

Comment: On Attachment 8 – Buffer Zone Map, the Wastewater Treatment Plant is identified as the boundary of all units. The150 ft buffer indicated is not from the treatment units, each treatment unit is not shown, and the distance from each treatment unit to the property boundaries is not shown as required in Section 3. A. TCEQ-10053 (10/31/2022 Page 17 of 24). A minor detail given is that the buffer meets requirements, but the figure does not meet the language of the permit application.

Recommended Changes:

- Log actual water balance daily with application/storage records to determine that irrigation rates do not exceed evapotranspiration (ET) rates of cover crop.
- Verify adequacy of 3-day storage volume provided in the storage pond and account for seasonal differences during cool and rainy seasons through use of long-term hydrological data and a water balance for the SADDS system.

- Determine location and installation of additional soil moisture sensors to determine areas of soil saturation. Evaluate performance of such sensors over time.
- For each phase of development, establish 100% of design vegetation cover for that area prior to initiation of irrigation.
- Determine mitigation measures to eliminate presence and development of preferential flow percolating into shallow groundwater systems.

In summary, effluent irrigation on lands in the sensitive Barton Springs Contributing Zone, especially so close to Barton Creek, should be undertaken carefully and in a manner that fully protects surface waters and recharge to the Edwards Aquifer. TCEQ's draft permit should include additional permit provisions requiring modifications to the proposed design and operations of the irrigation system to protect the water resources at risk.

If you have questions, please contact me at (512) 974-2212.

Sincerely,

Katie Coyne
Environmental Officer
Watershed Protection Department
City of Austin

References

Clamann, A, and S Hiers, A Richter, M Scoggins, C Herrington. 2014. Reclaimed water irrigation water quality impact assessment, Phase 1 Summary of Results. City of Austin Watershed Protection Department. DR-15-03. 17 p.

Neethling, J and M Falk, E Evans. 2023. Guidelines for Optimizing Nutrient Removal Plant Performance. HDR, Inc. for The Water Research Foundation. Project No. 4973. 613 p.

Porras, A, and A Richter, A Claman, S Hiers, M Scoggins, C Herrington, W Burdick, S Sudduth. 2016. Reclaimed water irrigation water quality impact assessment. City of Austin Watershed Protection Department. SR-16-06. 50 p.

Richter, A, and S Hiers. 2017. Comparison of water quality at locations currently receiving wastewater effluent irrigation to locations planned for future wastewater effluent irrigation. City of Austin Watershed Protection Department. DR-18-01. 18 p.

Sydow, L. and S Zappitello, K Parker, A Guidry. 2024. Upper Barton Creek Gain/Loss Study at Shield Ranch. City of Austin Watershed Protection Department. RR-24-01. 20 p.

cc:
Jorge L. Morales, P.E., CFM, WPD Director
Firoj Vahora, TCEQ Municipal Permits MC-148

The City of Austin is committed to compliance with the Americans with Disabilities Act.
Reasonable modifications and equal access to communications will be provided upon request.

Attachment 1

Reclaimed water irrigation water quality impact assessments

City of Austin
WATERSHED
PROTECTION

Reclaimed water irrigation water quality impact assessment, Phase 1 Summary of Results

DR-15-03; December 2014

Andrew Clamann, Scott Hiers P.G., Aaron Richter E,I,T,, Mateo Scoggins and Chris Herrington, P.E..

City of Austin
Watershed Protection Department
Environmental Resource Management Division

Introduction

Watershed Protection Department staff collected water samples to enable evaluation of the potential water quality impacts on surface and ground water resources from the irrigation of reclaimed water provided by City of Austin wastewater treatment facilities within the critical water quality zone and floodplain as defined by the City of Austin Land Development Code. Reclaimed water irrigation adjacent to creeks may migrate to shallow groundwater and into creeks through subsurface water flow, may be irrigated directly into creeks during improper spray application, or may load constituents into riparian soils that exceed natural assimilative capacities and thus be transported to creeks during runoff events. The following is a summary of the results of initial sampling from on-site reclaimed water, surface water, ground water and periphyton. Preliminary conclusions based on these initial results are provided at the end of this summary data report.

This project was designed with two phases. Phase one sampling was a one-time evaluation of upstream and downstream conditions relative to on-site reclaimed water and local spring discharge. Sampling for phase two will be determined based on the results of phase one and includes repeated follow-up sampling to illuminate spatial and temporal variability and to allow application of robust statistical analysis methods.

Methods

The field investigation was conducted on October 15, 2014. Physiochemical parameters were collected in the field using a multiprobe water quality meter, and spring and stream discharge was measured with a Marsh McBirney Flowmate. Water samples from reclaimed water sources (irrigation lines and ponds), surface water (streams), groundwater (spring discharge) and periphyton (from rock scrapings) were collected by WPD staff and delivered to the Lower Colorado River Authority laboratory for analysis following City of Austin standard operating procedures.

In the first phase of this study 21 sites within one park and three golf courses with recent application of reclaimed water were sampled (Table 1, Figure 1). Sites included four known springs (10765, 661, 662, and 10769), on-site reclaimed water irrigation source ponds or supply lines (10767, 10775, 10779, and 10768), and upstream/downstream sample sites on creeks (3858/10767, 10773/625, 3879/10778, 10770/10772, and 843/10771).

Table 1. Sites sampled during phase 1.

Location	Site number and name	Purpose
Bartholomew Park	3858 Tannehill Creek @ Berkman Dr	upstream of irrigation
	10766 Tannehill downstream of Bartholomew Spring	downstream of irrigation
	10767 Bartholomew Park Irrigation water	source water for irrigation
	10765 Bartholomew Spring	groundwater spring
Hancock Golf Course	10773 Waller Creek @ 45th	upstream of irrigation
	625 Waller Creek @ 38th	downstream of irrigation
	10775 Hancock Irrigation Water	source water for irrigation
Morris Williams Golf Course	843 Tannehill @ Lovell	upstream of irrigation area (mainstem of Tannehill)
	10771 Tannehill @ MLK	downstream of irrigation area (mainstem of Tannehill)
	10770 Morris Williams Central Trib upstream	upstream of irrigation area (tributary of Tannehill)
	10772 Morris Williams Central Trib downstream	downstream of irrigation area (tributary of Tannehill)
	10768 Morris Williams Irrigation Pond	source water for irrigation
	10769 Moose Lodge Spring	groundwater spring
Jimmy Clay/Roy Kizer Golf Course	10776 Williamson downstream Pleasant Valley	upstream of irrigation
	3879 Williamson Creek at Dove Springs Park	upstream of spring
	661 Roy Kizer Spring	groundwater spring
	10778 Williamson downstream Roy Kizer Spring	downstream of spring
	10779 Roy Kizer Reclaim Water Pond	source water for irrigation
	65 Onion Creek at William Cannon	upstream of irrigation area
	253 Onion Creek at McKinney Falls upper pool	downstream of irrigation area
	662 Driving Range Spring	groundwater spring

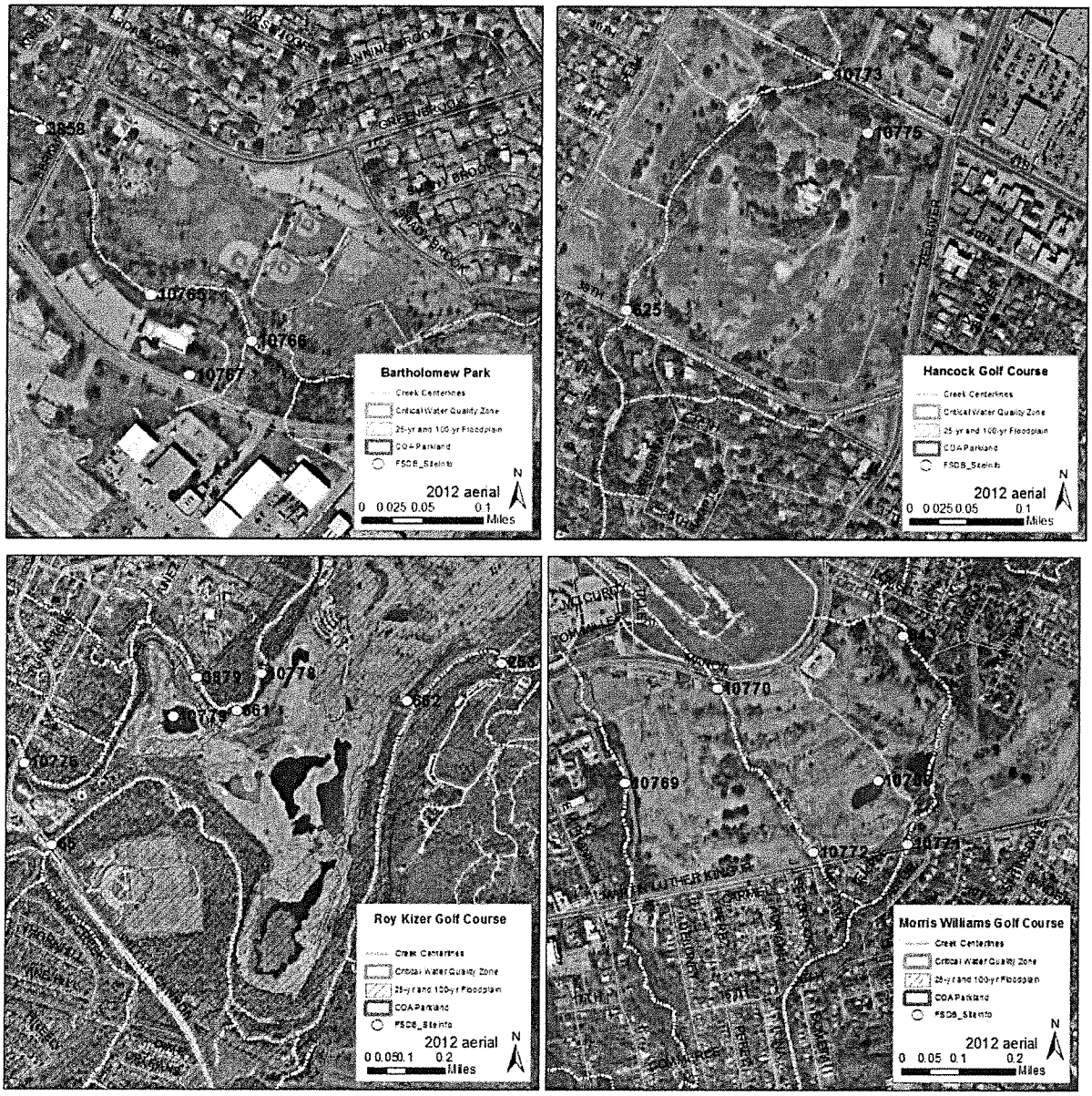


Figure 1. City of Austin parks and golf courses and sample locations selected to determine potential for impacts to surface and spring water.

Data for the following parameters were collected in water samples:

Field Parameters
- Conductivity
- Dissolved Oxygen
- Temperature
- pH
- Discharge (flow)

Ions
- Chloride
- Flouride
- Calcium
- Magnesium
- Sodium
- Potassium
- Sulfate
- Calcium Carbonate (Alkalinity)
- Strontium

Nutrients and Organic Carbon
- Nitrogen, Nitrate & Nitrite (as N)
- Ammonia, Total (as N)
- Total Kjeldahl Nitrogen (as N)
- Phosphorus, Total (as P)
- Orthophosphorus Total (as P)
- Total Organic Carbon (TOC)

Stable Isotopes
- Nitrogen-15/Nitrogen-14 Ratio
- Oxygen-18/Oxygen-16 Ratio

In addition to water samples, periphyton scrapings from rocks (epilithon) were collected from randomly selected rocks within the riffles upstream and downstream of each irrigation site. Pursuant to City of Austin Standard Operating Procedures, rocks were collected from undisturbed areas in the riffle before other sampling had occurred. Rocks chosen were relatively flat to ensure a consistent sample area. An area of 47 cm^2 was scraped from each rock and placed into a shallow collecting pan. Each rock was rinsed with deionized water to flush epilithon from the rock. Material from nine rocks in each riffle was composited in the collection pan and then placed into one darkened sample bottle and one sample bottle with H_2SO_4 for preservation. Samples were analyzed for chlorophyll *a* (opaque bottle), total organic carbon, total phosphorus, ammonia, nitrate plus nitrite, and Total Kjeldahl Nitrogen (acidified bottle).

Results and Discussion

The only site that was dry at the time of the investigation was Williamson at Pleasant Valley (site 10776), which was intended to represent upstream conditions for the segment of Williamson creek at Roy Kizer Golf Course. Williamson Creek surface flow at the time of this investigation originated near the Roy Kizer Golf Course, but an accurate total stream discharge was difficult to measure due to a portion of the discharge flowing through the cobble and gravel alluvial substrate. The next available site with measurable flow to represent upstream conditions was Williamson at Dove Springs (site 3879). Although Williamson at Dove Springs was used to represent upstream conditions for Williamson Creek, it may already have been impacted by migration of reclaimed water effluent from the golf course.

Reclaimed Water Characterization

Reclaimed water holding ponds were sampled at the Morris Williams and Roy Kizer golf courses, and samples were collected directly from reclaimed water irrigation supply lines at Hancock Golf Course and Bartholomew Park (Table 2). Concentrations of nutrients are reduced in the ponds relative to the direct irrigation supply line samples. Ion concentrations in the Roy Kizer storage pond are anomalous with respect to the other samples and long-term Walnut Creek WWTP averages.

Table 2. Results (mg/L) from reclaimed water supplies versus average (2007-2009) Walnut Creek Wastewater Treatment Plant effluent. Total nitrogen is calculated from constituents, and cannot be completely estimated in Walnut Creek WWTP effluent because organic nitrogen data is missing.

Parameter	Bartholo-mew	Hancock	Morris Williams Pond	Roy Kizer Pond	Walnut Creek WWTP Effluent	
					average	stdev
Alkalinity as CaCO3	31.2	38.2	33.4	110	35.33	23.43
Ammonia as N	0.812	0.774	0.043	0.0436	0.28	0.62
Calcium	45.8	45	42.8	35.7	38.23	6.35
Chloride	113	113	119	108	90.83	18.09
Conductivity	1082	1137	1058	827.6	.	.
Dissolved Oxygen	7.83	5.14	16.67	13.49	7.59	0.69
Fluoride	1.75	1.78	1.59	1.32	1.93	0.63
Magnesium	28	26.9	29.3	26.7	17.29	1.43
Nitrate+Nitrite as N	25.5	28.5	14.9	16	20.42	3.76
Orthophosphorus as P	4.51	4.71	0.631	1.08	4.45	1.18
pH	6.83	6.48	9.98	9.75	6.70	0.34
Phosphorus as P	4.62	4.53	1.36	1.44	4.49	1.17
Potassium	15	14.3	15.9	15.7	.	.
Sodium	117	112	122	82.5	76.82	9.19
Strontium	0.265	0.258	0.248	0.179	0.28	.
Sulfate	180	191	181	63.7	90.75	20.42
Total Kjeldahl Nitrogen as N	1.28	0.882	1.68	1.98	.	.
Total Nitrogen as N	26.78	29.38	16.58	17.98	>20.70	.

Discharge

Stream discharge was present at the upstream end of the central tributary on the Morris Williams Golf Course. However, due to the low flow (estimated <0.001 ft^3/s) it was not measured. Flow at all other sites was present during the sample event (Figure 2). Although some stream reaches were gaining flow while others were losing flow, the available baseflow enabled upstream/downstream comparisons. Bank seeps were observed in gaining stream reaches at Morris Williams Golf Course. Direct discharge of reclaimed water was observed to a biofiltration stormwater control and thence to Tannehill Creek at Bartholomew Park. The losing nature of some of these stream reaches may be due to subsurface flow thru alluvial substrate.

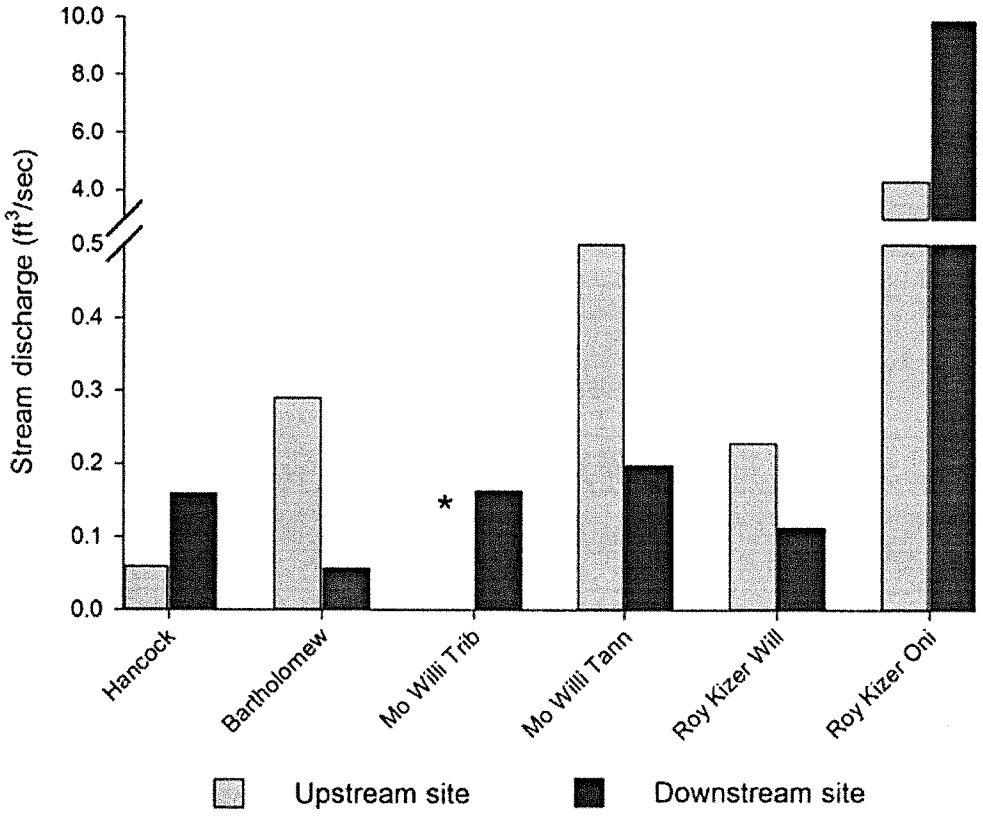


Figure 2. Stream discharge at upstream and downstream sample sites. See maps in Figure 1 for spatial orientation of upstream and downstream study sites. *Upstream site at Morris Williams Central Tributary was flowing, but was <0.001 cfs.

Conductivity

Conductivity was higher at downstream sites compared to upstream sites in 4 of 6 pairs (Figure 3). The difference in conductivity was larger between the upstream/downstream sites of the three creeks with low flow on bedrock stream substrate (i.e. Bartholomew, Morris Williams Tributary, Roy Kizer Williamson). Conductivity differences between upstream/downstream pairs were minor on larger creeks (i.e. Hancock Waller and Roy Kizer Onion) where higher baseflow could dilute the influence of reclaimed water or baseflow was largely subsurface thru alluvial substrates.

Average conductivity of upstream sites was 450 µS/cm (range 279 – 841 µS/cm)while the average conductivity of downstream sites was 565 µS/cm, which is an increase of 25%. Elevation of the specific conductance in the baseflow of a stream would be expected if there were contributions from reclaimed wastewater since reclaimed water samples indicated a much higher average conductivity (1,026 µS/cm).

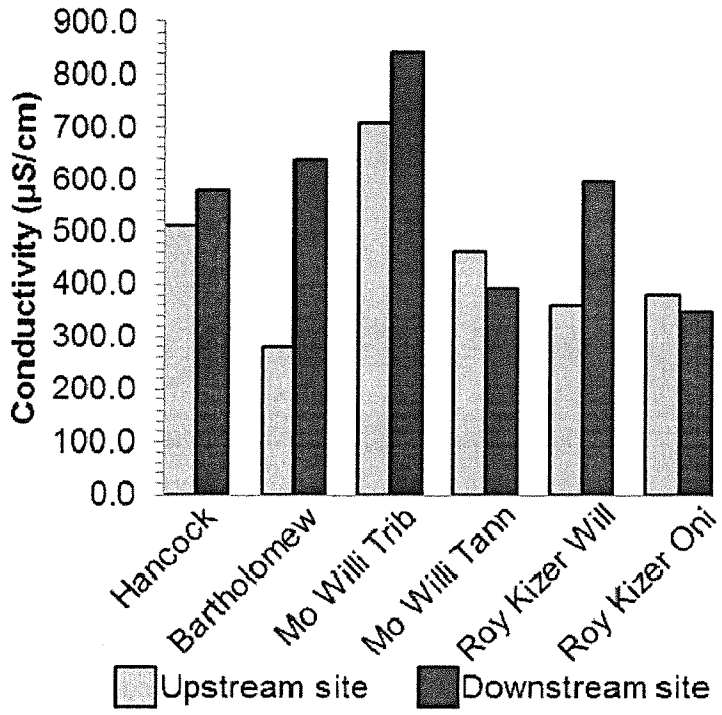


Figure 3. Conductivity values at upstream and downstream sample sites.

Chloride and Fluoride

Chloride and fluoride can be used to detect influence of municipal treated water or wastewater on surface and ground water in Austin.

A comparison of fluoride concentrations from upstream and downstream sites in the study area shows that most (4/6) sites have higher concentration in downstream samples compared to upstream samples (Figure 4A). The average fluoride concentration in reclaimed water was 1.61 mg/L, and Austin Water maintains fluoride concentrations in finished drinking water with a control range of 0.6 to 0.8 mg/L. As would be

expected, differences are less evident in stream segments on the mainstem of large creeks such as Waller and Onion whose higher baseflow and urban influences obscure or dilute potential. Average fluoride concentration for all upstream sites was 0.25 mg/L while the average concentration for all downstream sites was 0.28 mg/L.

More prominent differences were observed in the comparison of chloride results from upstream to downstream relative to fluoride concentrations. Sample results show that most sites (5/6) have a higher concentration in downstream samples (Figure 4B). Average chloride concentration in reclaimed water was 113 mg/L. Average chloride concentration for all upstream sites was 20 mg/L while average concentration for all downstream sites was 42 mg/L.

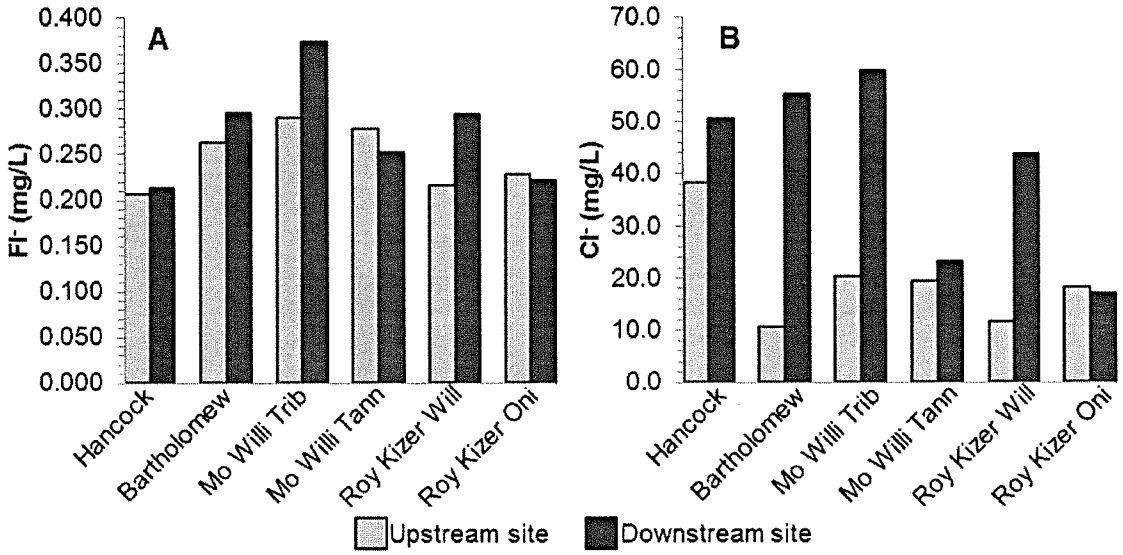


Figure 4. Fluoride (A) and chloride (B) concentrations at upstream and downstream sample sites.

Because chloride and conductivity are generally conservative in surface water, a simple mass balance calculation utilizing the concentrations of upstream, downstream and reclaimed water sites can be made to estimate the maximum potential ratio of reclaimed water exfiltrating from soils into creeks relative to upstream flow (Table 3). This calculation assumes that the difference between upstream and downstream concentrations would only be a result of reclaimed water addition to the adjacent creek. This mass balance analysis suggests the highest potential influence of reclaimed water on adjacent creeks occurs in Bartholomew Park, the Central Tributary to Tannehill in Morris Williams Golf Course, and in Williamson Creek adjacent to Jimmy Clay/Roy Kizer Golf Course.

Table 3. Ratio of the maximum potential reclaimed water exfiltration to streams relative to upstream surface water discharge estimated by simple mass balance. Negative ratios occur when downstream concentrations exceed upstream concentrations.

Parameter	Bartholomew	Hancock	MorrisWilliams (Tannehill mainstem)	MorrisWilliams (Tannehill Central Tributary)	Onion	Williamson
Conductivity	0.81	0.12	-0.10	0.61	-0.07	1.02
Chloride	0.78	0.20	0.04	0.67	-0.01	0.50

Additional Ions

In addition to physiochemical and chloride/fluoride concentrations, a suite of cation and anion parameters were evaluated to determine if surface water impacts are occurring within the study area (Figure 5A-F). As shown in Figure 5, most of the downstream sites were higher in concentration than the upstream sites for all ions. Of the total 36 upstream/downstream comparisons, the downstream site was higher in ion concentration than the upstream site in 28 instances. Although the Hancock sites did not show much difference, some increased downstream concentrations were evident. For all six ions compared at Bartholomew Park, ion concentration of downstream sites increased between 2-4 times that of upstream sites. Of note, the central tributary of Morris Williams Golf Course (Figure 5F, Mo Willi Trib) saw an eight-fold increase in sulfate.

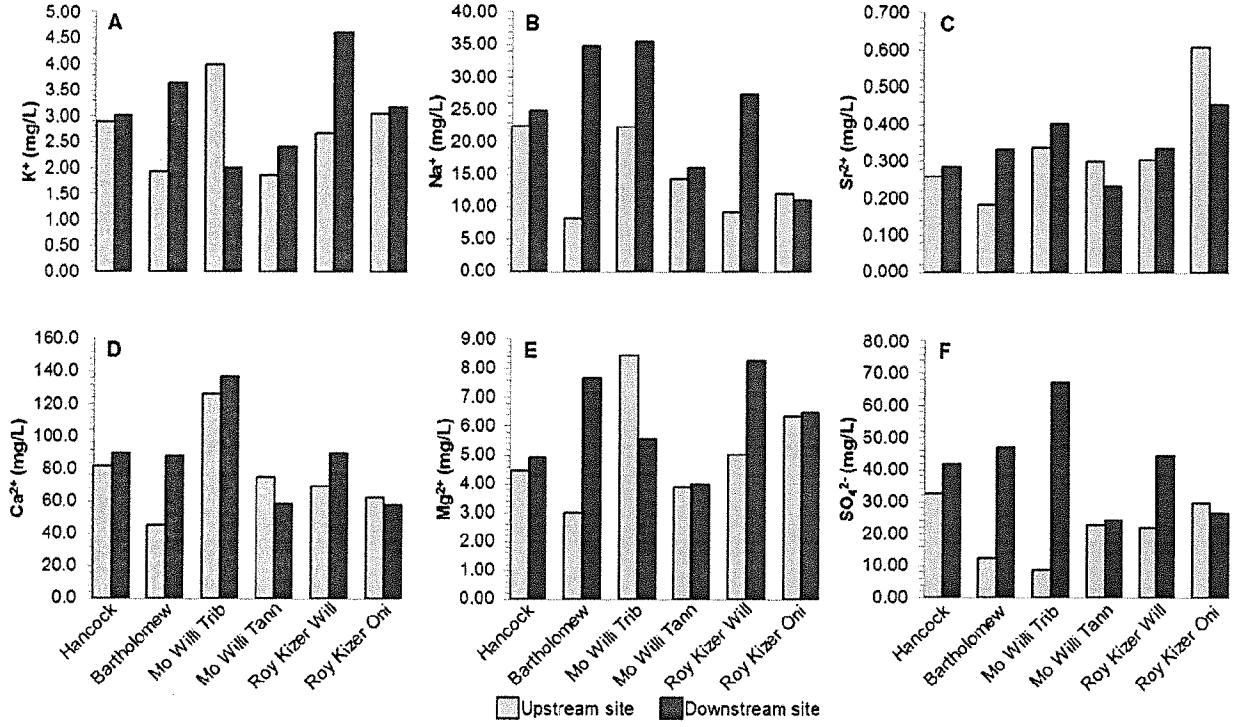


Figure 5. Potassium (A), sodium (B), strontium (C), calcium (D), magnesium (E), and sulfate (F) concentrations at upstream and downstream sample sites.

Analysis of groundwater (spring discharge) indicates similar results to surface water. Characterization of groundwater typically includes examining the cation and anion concentrations to determined hydrochemical facies of the groundwater system. The standard ions used are Na^+, K^+, Ca^{2+}, Mg^{2+}, HCO_3^-, SO_4^{2-}, and Cl^-. The trilinear graph or "piper plot" is the standard method for presenting the cation and anion data. Each apex of a triangle represents 100% of one or two ion constituents, with the cations represented at the lower left triangle and anions at the lower right triangle (Figure 6). The diamond-shape area between the two triangles is used to project a point that represents both the cation and anion concentrations. The advantage of the piper diagram is that a large number of samples with multiple

parameters can be plotted to reveal trends with minimal confusion. The effects of mixing water from two different sources can become apparent. The mixing of two different waters will result in a plot in which unimpacted waters will be separated from pollution sources, and the impacted waters will form an intermediate line in between.

The ion data for the reclaimed water results is shown in the piper plot (Figure 6). Reclaimed water (from irrigation lines and ponds) is clearly distinct in its characterization within the plot on the right hand sides (pink squares) while the upstream, or unimpacted sites (open triangles) are clustered on the left hand side. The downstream sites (grey triangles) migrate in the direction of the reclaimed water characterization. The linear drift in the ion data towards the ion composition measured for reclaimed water indicates the mixing of sodium, chloride and sulfate enriched reclaimed irrigation water with both the background groundwater and surface water.

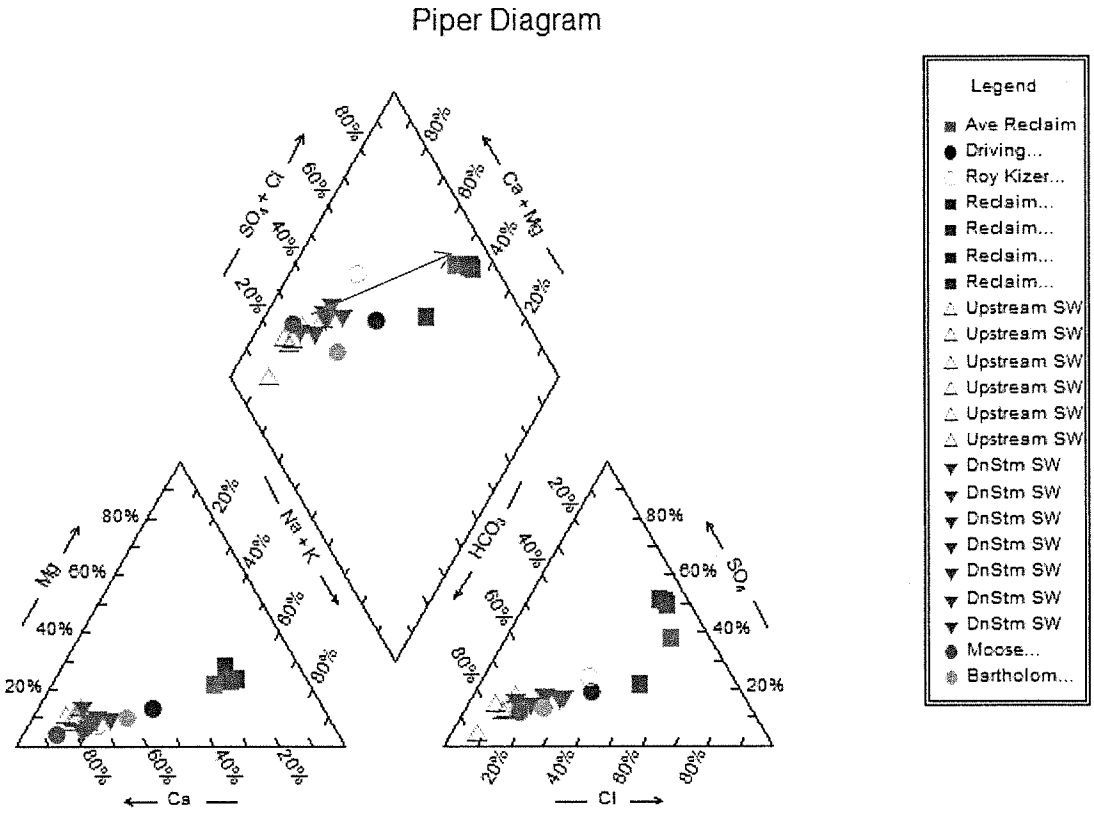


Figure 6: Piper diagram of major cation and anion data.

Nutrients

Excess nutrients in surface water can result in nuisance algal blooms that cause swings in dissolved oxygen concentrations, aquatic life community imbalance, odor problems and fish kills (Wharfe et al. 1984; Biggs 1985; Biggs and Price 1987; Welch et al. 1988; Quinn and Gilliland 1989; Quinn and Hickey 1990). Nutrient concentrations were higher at the majority of the downstream sites compared to the upstream sites (Figure 7A-F), especially as shown by nitrate/nitrite concentrations (Figure 7D). The increase in nutrient concentrations is most evident at Bartholomew Park and at Morris Williams Golf Course. Of note, the nitrate/nitrite concentration at the downstream site was 55 times higher than the

upstream site at both Bartholomew Park and Williamson Creek sites associated with Roy Kizer Golf Course. The average nitrate/nitrite concentration at upstream sites was 0.32 mg/L while the average downstream concentration was 1.15mg/L (total range 0.02 – 2.00 mg/L). Similarly, an increase in phosphorus (both orthophosphorus and total phosphorus) concentration is seen between upstream and downstream at four of the six monitoring sites (Figure 7E). Increases in nutrients at Morris Williams Golf Course and Bartholomew park were particularly noticeable. All of the nutrient parameters (TN, TKN, NH3, NO2+NO3, TP and OP) evaluated on Morris Williams Golf Course Tannehill sites (see Mo Willi Tann below), were between two to twenty-five times higher at the downstream sites than at the upstream sites. All nutrient parameters were higher at the downstream sites of Bartholomew Park as well.

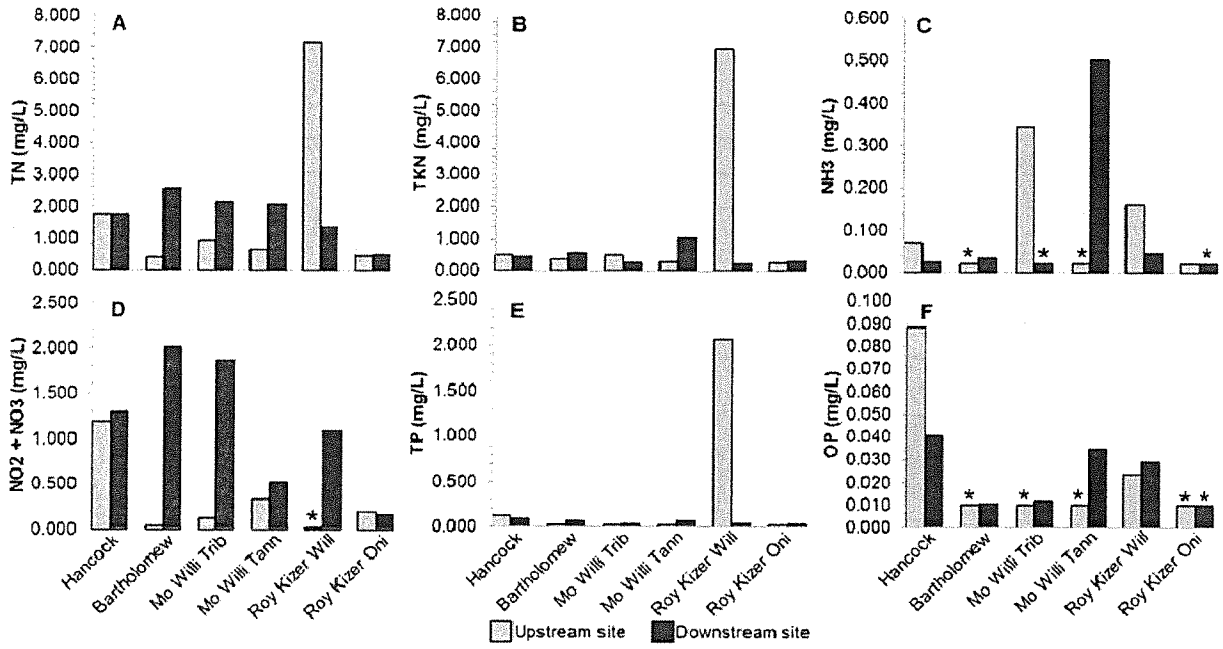


Figure 7. Total nitrogen (A), total kjeldahl nitrogen (B), ammonia (C), nitrate and nitrite (D), total phosphorus (E), and orthophosphate (F) at upstream and downstream sample sites. * indicates sample concentrations were below detection limits.

The total phosphorus concentration at the upstream site on Williamson Creek at the Roy Kizer Golf Course was 2.00 mg/L, two orders of magnitude greater than the background concentrations of about 0.02 mg/L. Although Williamson Creek was dry just upstream of the Roy Kizer Golf Course (site 10776), the creek begins to flow as it winds around the golf course (site 3879). The observed elevated total phosphorus concentration recorded at Williamson Creek above Roy Kizer Kizer Spring may be a result of reclaimed water contribution to the shallow groundwater seepage that creates surface baseflow in this reach.

Benthic Algae

Chlorophyll *a* is commonly used to determine the algal biomass of a system. Carbon:Nitrogen:Phosphorus stoichiometry in algal cells has been shown to respond to increases in nutrient loads. An increased load of nitrogen or phosphorus leads to lower C:N or C:P ratios in periphyton communities (Hillebrand and Kahlert 2001; Hillebrand and Kahlert 2002; Stelzer and Lamberti 2001; Frost and Elser 2002; Bowman et al. 2005). The increased amounts of nitrogen or phosphorus in the algal

cells can lead to an increase in the algal growth rates (Rhee 1973; Droop 1974). This may allow benthic algal biomass to increase more rapidly in nutrient enriched water.

Benthic algae results for the C:P ratios and chlorophyll *a* content of samples collected upstream and downstream of irrigation sites were calculated on a consistent spatial scale (Table 4). Results for the benthic algae samples collected in the tributary to Tannehill Creek downstream of the Morris Williams Golf Course are not shown because a lack of rock substrate in the upstream site did not allow for benthic algae collection and thus there is no data available for comparison.

Table 4: Benthic algae chlorophyll *a* and carbon to phosphorus (C:P) ratios collected upstream and downstream of each reclaim irrigation site.

Site	Benthic Chlorophyll a (mg/m^2)		Benthic C:P Ratio	
	Upstream	Downstream	Upstream	Downstream
Bartholomew	35.40	56.60	11.1	10.4
Morris Williams:Tannehill mainstem	79.40	88.90	15.3	7.8
Hancock: Waller	26.10	65.00	8.0	9.8
Clay/Kizer: Onion	14.10	8.30	17.7	6.1
Clay/Kizer: Williamson	9.20	41.40	26.3	9.8

Benthic chlorophyll *a* (mg/m^2) increased from upstream to downstream at four out of five irrigation sites (Figure 8). Not enough data points exist yet to perform a statistical analysis with strong power to ensure statistical inferences would be accurate; however, the increasing pattern in the benthic chlorophyll *a* suggest an increase in nutrient loading to the creek at the potentially irrigation-influenced downstream sites. In addition, the trophic status as proposed by Dodds et al. (1998) and accepted by the US Environmental Protection Agency (2001) may have shifted from oligotrophic (< 20 mg/m^2 chlorophyll *a*) to mesotrophic (20-70 mg/m^2 chlorophyll *a*) on Williamson Creek upstream to downstream of the Clay/Kizer irrigation area. More sample events are needed at the study reaches before trophic status can be definitively determined.

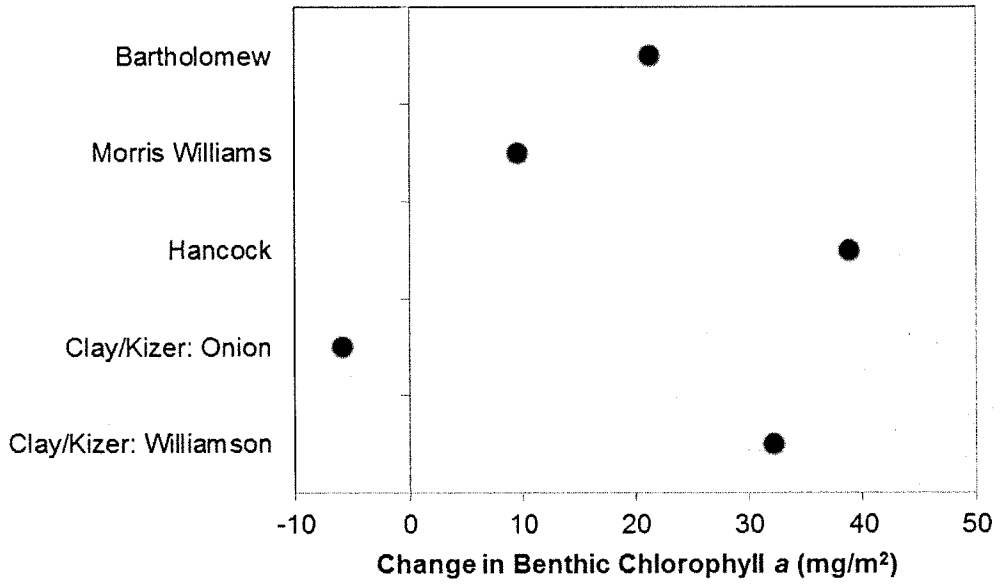


Figure 8: Change in benthic algae chlorophyll *a* (mg/m^2) from upstream to downstream at each site.

Benthic C:P ratios decreased from upstream to downstream at four out of five irrigation sites (Figure 9). Not enough data points exist yet to perform a statistical analysis with strong power to ensure statistical inferences would be accurate; however, the decreasing pattern in the benthic C:P ratios suggest an increase in nutrient load to the creek at the downstream sites.

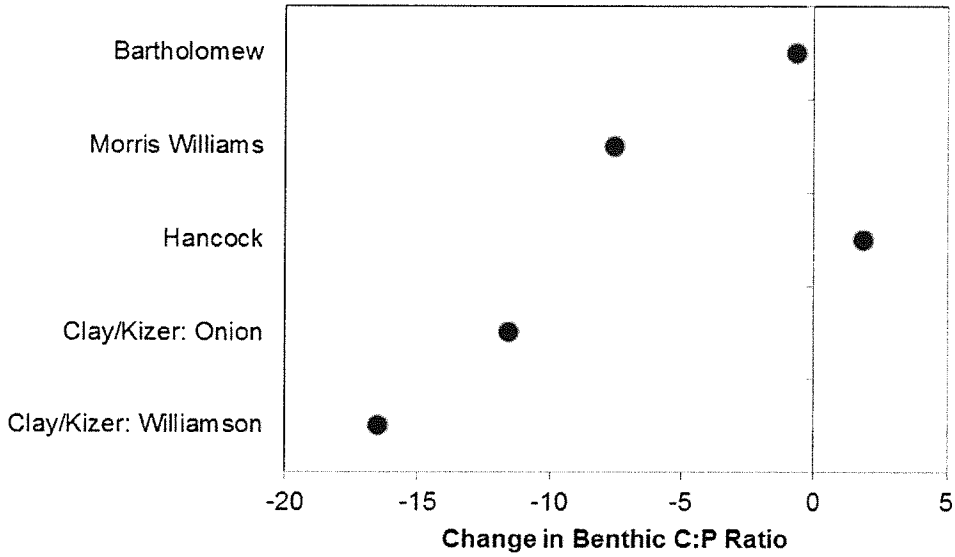


Figure 9: The change in benthic algae carbon to phosphorus (C:P) ratios from upstream to downstream at each reclaim irrigation site.

Nitrogen Isotopes

Lab analysis of the stable nitrogen and oxygen isotope ratios of nitrate collected during the initial October 25, 2014, sampling event revealed that all sites with sufficient nitrate for isotope analysis plotted in the biogenic range, suggesting that the source of nitrogen was manure or wastewater (Figure 10). There was no indication that the nitrogen was originating from precipitation or fertilizer application. Both upstream and downstream sites on Waller plotted in the biogenic range, possibly indicating leaking wastewater infrastructure upstream of the Hancock Golf Course. The inconsistent relationships between the irrigation water sources and the receiving water samples are intriguing, and suggest that differential nitrification and denitrification processes may be occurring.

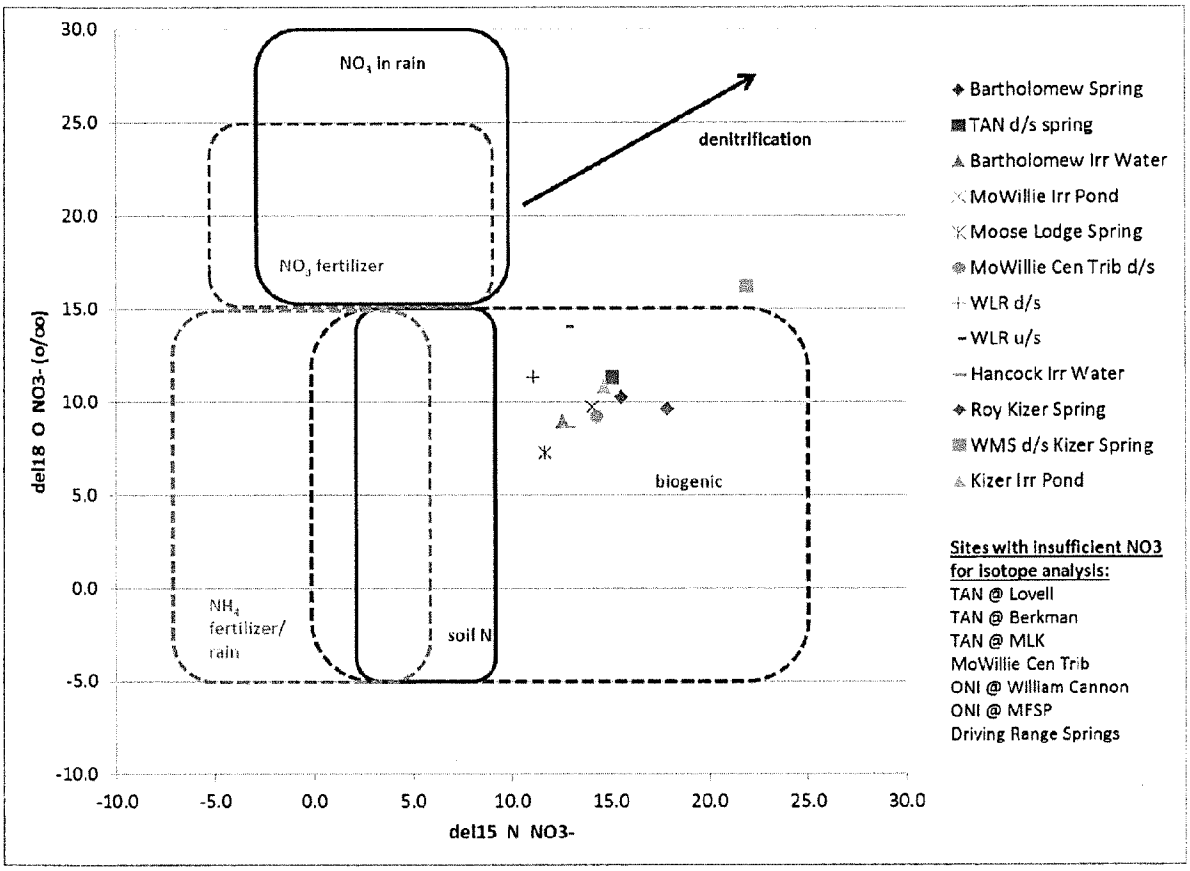


Figure 10. Nitrogen/Oxygen stable isotope ratio plot for study sites.
Source boundaries adapted from Kendall 1998.

Conclusions

As phase one of a two phase study, surface water and groundwater samples were collected on October 15, 2014, at sites upstream and downstream of four locations utilizing City of Austin reclaimed water for irrigation in close proximity to creeks. Samples were analyzed for physiochemical parameters, ions, nutrients, and nitrate isotopes. Benthic algal scrapings were analyzed for area-adjusted algal biomass and nutrient to carbon ratios. Initial analysis of the phase one results indicates:

- Reclaimed water chemical composition changed when the reclaimed water was stored in open holding ponds relative to composition in distribution pipes.
- Conductivity was higher in 4 out of 6 sites downstream of reclaimed water irrigation areas. Average conductivity of upstream surface water sites was 450 µS/cm, and average conductivity of downstream surface water sites was 565 µS/cm.
- Chloride (5/6) and fluoride (4/6) were generally higher in sites downstream of reclaimed water irrigation areas. Average chloride concentrations for upstream surface water sites was 20 mg/L, and average chloride concentrations for downstream surface water sites was 42 mg/L.
- Mass balance of chloride and conductivity, which are conservative in Austin streams, suggests the highest potential influence of reclaimed water on adjacent creeks occurs in Bartholomew Park, the central tributary to Tannehill Branch in Morris Williams Golf Course, and in Williamson Creek adjacent to Jimmy Clay/Roy Kizer Golf Course.
- Ion concentrations generally increase at surface water sites downstream of reclaimed water irrigation.
- Ion composition at springs adjacent to reclaimed water irrigation locations and downstream surface water sites are migrating towards a composition more similar to reclaimed water relative to upstream surface water composition.
- Increased nutrients, especially nitrate plus nitrite, are generally observed in downstream samples. Total nitrogen and total phosphorus were higher in 4 out of 6 sites.
- Nitrogen and oxygen isotopes of nitrate for all sites with sufficient nitrate for analysis indicated that nitrogen was originating from biogenic (manure or wastewater) sources. Nitrogen in Waller Creek upstream of Hancock Golf Course also yielded a biogenic signature.
- Benthic chlorophyll *a* concentrations and C:P ratios suggest an increased loading of nutrients downstream of irrigations sites. Benthic chlorophyll *a* concentrations downstream of the Clay/Kizer Golf Course might be indicative of a change in trophic status of Williamson Creek.

Acknowledgements

This initial sampling event was completed with the assistance of multiple City of Austin Parks and Recreation Department staff, who facilitated access to the park and golf course locations. Additionally, Dan Pedersen with Austin Water provided background information on the use of reclaimed water at these locations, and provided reclaimed water sampling information. Watershed Protection Department expresses thanks to these individuals for assisting with this project.

References

Biggs, BJF. 1985. Algae: a blooming nuisance in rivers. Soil and Water, 21: 27–31.

Biggs, BJF, and GM Price. 1987. A survey of filamentous algal proliferations in New Zealand rivers. New Zealand Journal of Marine Freshwater Research, 21: 175–191.

Biggs, BJF, and HA Thomsen. 1995. Disturbance in stream periphyton by perturbations in shear stress: time to structural failure and differences in community resistance. Journal of Phycology, 31: 233–241.

Bowman, MF, PA Chambers, and DW Schindler. 2005. Changes in stoichiometric constraints on epilithon and benthic macroinvertebrates in response to slight nutrient enrichment of mountain rivers. Freshwater Biology, 50(11): 1836-1852.

Dodds, WK, JR Jones, and EB Welch. 1998. Suggested classification of stream trophic state—Distributions of temperate stream types by chlorophyll, total nitrogen, and phosphorus: Water Research, 32: 1455–1462.

Droop, MR. 1974. The nutrient status of algal cells in continuous culture. Journal of the Marine Biological Association of the United Kingdom, 54(4): 825-855.

Frost, PC, and JJ Elser. 2002. Effects of light and nutrients on the net accumulation and elemental composition of epilithon in boreal lakes. Freshwater Biology, 47: 173–183.

Hillebrand, H, and M Kahlert. 2001. Effect of grazing and nutrient supply on periphyton biomass and nutrient stoichiometry in habitats of different productivity. Limnology and Oceanography, 46: 1881–1898.

Hillebrand, H, and M Kahlert. 2002. Effect of grazing and water column nutrient supply on biomass and nutrient content of sediment microalgae. Aquatic Botany, 72: 143–159.

Kendall, Carol. 1998. Tracing nitrogen sources and cycling in catchments. *IN* Isotope Tracers in Catchment Hydrology. Edited by C. Kendall and J.J. McDonnell. Elsevier Science B.V., Amsterdam.

Peterson, CG, and RJ Stevenson. 1989. Substratum conditioning and diatom colonization in different current regimes. Journal of Phycology, 25: 790–793.

Quinn, JM, and BW Gilliland. 1989. The Manawatu River cleanup—has it worked? Transactions of the Institution of Professional Engineers, New Zealand, 16: 22–26.

Quinn, JM, and CW Hickey. 1990. Magnitude of effects of substrate particle size, recent flooding and catchment development on benthic invertebrate communities in 88 New Zealand rivers. New Zealand Journal of Marine and Freshwater Research, 24: 411–427.

Rhee, G. 1973. A continuous culture study of phosphate uptake, growth rate and polyphosphate in Scenedesmus sp. Journal of Phycology, 9(4): 495-506.

Stelzer, RS, and GA Lamberti. 2001. Effects of N:P ratio and total nutrient concentration on stream periphyton community structure, biomass, and elemental composition. Limnology and Oceanography, 46: 356–367.

Stevenson, RJ. 1983. Effects of current and conditions simulating autogenically changing microhabitats on benthic diatom immigration. Ecology, 64: 1514–1524.

US Environmental Protection Agency (EPA). 2001. Ambient water quality criteria recommendations, information supporting the development of state and tribal nutrient criteria for rivers and streams in nutrient ecoregion IV: US Environmental Protection Agency, Office of Water, USEPA–822–B–01–013, pp 31.

Welch, EB, JM Jacoby, RR Horner, and MR Seeley. 1988. Nuisance biomass levels of periphyton algae in streams. Hydrobiologia, 157: 161–168.

Wharfe, JR, KS Taylor, and HAC Montgomery. 1984. The growth of *Cladophora glomerata* in a river receiving sewage effluent. Water Research, 18: 971–979.

City of Austin
WATERSHED PROTECTION

Reclaimed water irrigation water quality impact assessment

SR-16-06; April 2016

Abel Porras P.E., Aaron Richter E.I.T., Scott Hiers P.G., Andrew Clamann, Mateo Scoggins, Chris Herrington, P.E., William Burdick, and Stuart Sudduth

City of Austin
Watershed Protection Department

Introduction

In an effort to reduce demand on municipal potable water supply, the City of Austin is increasing utilization of reclaimed water. Although the benefits to potable water supply resources are clearly realized, the reclaimed water contains pollutants which may have the potential to degrade adjacent creeks and springs in some situations. For example, reclaimed water has elevated concentrations of nutrients (such as nitrogen and phosphorus) that may be an order of magnitude higher than stormwater runoff from developed urban land and two orders of magnitude higher relative to ambient surface water condition (Figure 1).

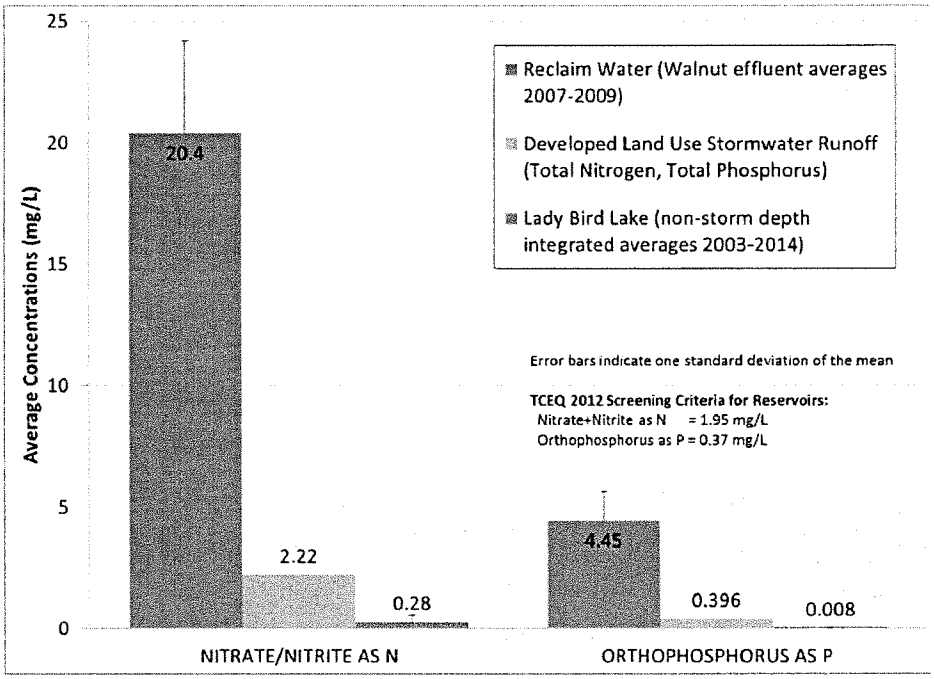


Figure 1: Nutrient concentrations of reclaimed water relative to developed land stormwater runoff and Lady Bird Lake averages (2003-2014). Nutrient concentrations in reclaimed water may be two to three orders of magnitude higher than ambient surface water.

Eutrophication is a well-described process which results when a water body receives an excessive supply of nutrients. In aquatic systems, nutrients such as nitrogen (N) and phosphorus (P) support the growth of algae and aquatic plants. An overabundance of nitrogen and phosphorus can alter the growth habits of algae by increasing to a rate that is faster than the ecosystem can manage. This nutrient enrichment can cause an increase in algal biomass (Figure 2) to the extent that entire reaches of streams show aesthetic degradation (Wharfe et al. 1984, Biggs 1985, Biggs and Price 1987, Welsh et al. 1988), loss of pollution-sensitive invertebrate taxa (Quinn and Hickey 1990), clogging of water intake structures (Biggs 1985), and degradation of dissolved oxygen and pH levels in the water column (Quinn and Gilliland 1989).

Figure 2. Examples of increased algal biomass in which filamentous algae covers the surface water at two sites within the project area; Site 10882 on Tannehill branch near Morris Williams golf course (left) and Site 10778 on Williamson Creek near Roy Kizer golf course (right).

Eutrophication of surface water resulting from land application of treated wastewater has been previously documented in the Austin area. The land application of treated wastewater was identified as a probable source of elevated nitrogen and phosphorus and cause of periphytic algal blooms in upper Bear Creek (Turner 2010). In addition, a strong biogenic nitrogen isotope signature is observed in a spring down-gradient from a golf course utilizing wastewater effluent for irrigation (COA unpublished data) and analysis of stormwater runoff data indicated higher concentrations of nutrients in runoff from golf courses irrigated with wastewater effluent versus golf courses without effluent irrigation (King et al. 2007, COA 2005). U.S. Geological Survey investigations in Florida have previously identified increases in chloride and nitrate in groundwater wells beneath municipal wastewater effluent sprayfields (Pruitt et al. 1988), and land application of treated municipal wastewater effluent was identified as a major source of nitrate to the regional discharge point of the Upper Floridan Aquifer (Katz et al. 2009).

Instream algal biomass can be difficult quantify, and chlorophyll *a* is commonly used as a surrogate to determine the algal biomass of a system. The Texas Commission on Environmental Quality (TCEQ) (2006) showed that benthic (attached) algal chlorophyll *a* could be a better indicator of nutrient enrichment than water-column chlorophyll *a* in small, fast flowing Texas streams. The organic growth of algae, cyanobacteria and heterotrophic microbes attached to the benthic surface is periphyton. The periphyton that colonize the surfaces of submerged rocks and other stable substrate can easily be scraped from the surface with standard methods in order to collect reproducible and standardized samples from streams.

In addition to the chlorophyll *a* concentrations of the periphyton, the carbon to nitrogen to phosphorus (C:N:P) stoichiometry in algal cells has been shown to respond to increases in nutrient loads. An increased load of nitrogen or phosphorus leads to lower carbon to nitrogen or carbon to phosphorus ratios

in stream and lake periphyton communities (Hillebrand and Kahlert 2001, Hillebrand and Kahlert 2002, Stelzer and Lamberti 2001, Frost and Elser 2002, Bowman et al. 2005). The increased amounts of nitrogen or phosphorus in the algal cells can lead to an increase in the algal growth rates (Rhee 1973, Droop 1974). This may allow benthic algal biomass to increase more rapidly in nutrient enriched water or contribute to nutrient spiraling downstream by increasing nutrients available to downstream reaches.

In the context of potential stream nutrient enrichment, the concerns related to the application of reclaimed water in close proximity of creeks include:

- migration of the reclaimed water to the creeks and shallow groundwater through infiltration and lateral groundwater flow;
- direct irrigation into creeks during improper spray application; and/or
- excessive constituent loading into riparian soils that exceed natural assimilative capacities and consequent transportation to creeks during runoff events.

To enable evaluation of the potential impacts to surface and groundwater quality, City of Austin Watershed Protection Department staff collected water samples from creeks and springs adjacent to locations with reclaimed water irrigation occurring within the Critical Water Quality Zone (CWQZ) and/or floodplain as defined by the City of Austin Land Development Code. This project was conducted in two phases.

Phase 1 sampling was a one-time sample effort of upstream and downstream conditions relative to on-site reclaimed water and local spring discharge in October of 2014. The results of Phase 1 sampling (Clamann et al. 2015) illuminated spatial and temporal variability and allowed application of robust statistical analysis methods which enabled the determination of the sampling locations and frequencies for Phase 2.

Phase 2 sampling included four sample events during the summer of 2015. The following is a summary of the combined results of the Phase 1 and Phase 2 sampling from on-site reclaimed water, surface water, groundwater and periphyton. The results of the Phase 2 sampling supported many of the preliminary Phase 1 conclusions.

Methods

Field Methods

The field investigation for Phase 1 was conducted on October 15, 2014. Phase 2 field investigations were conducted on July 23, August 27, September 24, and October 20 of 2015. Physiochemical parameters were collected in the field using a Hydrolab multiprobe water quality sonde. Spring and stream discharge was measured with a Marsh-McBirney Flowmate. Water samples from reclaimed water sources (irrigation lines and ponds), surface water (creeks), groundwater (spring discharge) and periphyton (from rock scrapings) were collected by WPD staff, preserved in ice, and delivered to the Lower Colorado River Authority laboratory for analysis following City of Austin standard operating procedures (WRE SOP 2013).

Phase 1 of this study included 21 sites which were located within one park and three golf courses that receive application of reclaimed water (Table 1 and Figure 3). Sites included four known springs (10765, 661, 662, and 10769), on-site reclaimed water irrigation source ponds or supply lines (10767, 10775, 10779, and 10768), and upstream/downstream sample sites on creeks (3858/10767, 10773/625, 3879/10778, 10770/10772, and 843/10771). The Phase 2 of this study included 15 sites within one park

and two golf courses (Table 1 and Figure 3). In addition to the samples collected at the sites listed in Table 1, each event included one field replicate sample to document potential for variance within a site.

Table 1: Site list and sample schedule

Location	Site number and name	Purpose	Phase 1	Phase 2			
			Oct 2014	Jul 2015	Aug 2015	Sep 2015	Oct 2015
Bartholomew Park	3858 Tannehill Creek @ Berkman Dr	upstream of irrigation	✓	x	✓	✓	no flow
	10766 Tannehill downstream Bartholomew Spring	downstream of irrigation	✓	x	✓	✓	✓
	10767 Bartholomew Park Irrigation water	source water for irrigation	✓	x	✓	✓	✓
	10765 Bartholomew Spring	groundwater spring	✓				
Hancock Golf Course	10773 Waller Creek @ 45th	upstream of irrigation	✓				
	625 Waller Creek @ 38th	downstream of irrigation	✓				
	10775 Hancock Irrigation Water	source water for irrigation	✓				
Morris Williams Golf Course	843 Tannehill @ Lovell	upstream of irrigation	✓	✓	✓	✓	✓
	10771 Tannehill @ MLK	downstream of irrigation	✓	✓	✓	✓	✓
	10770 Morris Williams Central Trib upstream	upstream of irrigation	✓	✓	✓	✓	✓
	10772 Morris Williams Central Trib downstream	downstream of irrigation	✓	✓	✓	✓	✓
	10768 Morris Williams Irrigation Pond	source water for irrigation	✓	✓	✓	✓	✓
	10769 Moose Lodge Spring	groundwater spring	✓				
	10882 Tannehill 340ft downstream of Lovell	Downstream of seep			✓	✓	✓
Roy Kizer Golf Course	10776 Williamson downstream Pleasant Valley	upstream of irrigation	Dry	✓	Dry	Dry	Dry
	3879 Williamson Creek at Dove Springs Park	upstream of spring	✓	✓	✓	✓	Dry
	661 Roy Kizer Spring	groundwater spring	✓	✓	✓	✓	✓
	10778 Williamson downstream Roy Kizer Spring	downstream of spring	✓	✓	✓	✓	Dry
	10779 Roy Kizer Reclaim Water Pond	source water for irrigation	✓	✓	✓	✓	✓
	10883 Roy Kizer Reclaimed Water Pipe	source water for irrigation		✓	✓	✓	✓
	65 Onion Creek at William Cannon	upstream of irrigation	✓				
	253 Onion Creek at McKinney Falls upper pool	downstream of irrigation	✓				
	662 Driving Range Spring	groundwater spring	✓				

shaded = sample collected, unshaded = sample not collected
"Dry" = site did not have baseflow,
"no flow" = site was sampled for periphyton, but not water chemistry due to lack of baseflow
"x" = site not sampled because facility damage; no irrigation for previous month due to repairs.
blank = site was not part of the QAPP at the time of sampling

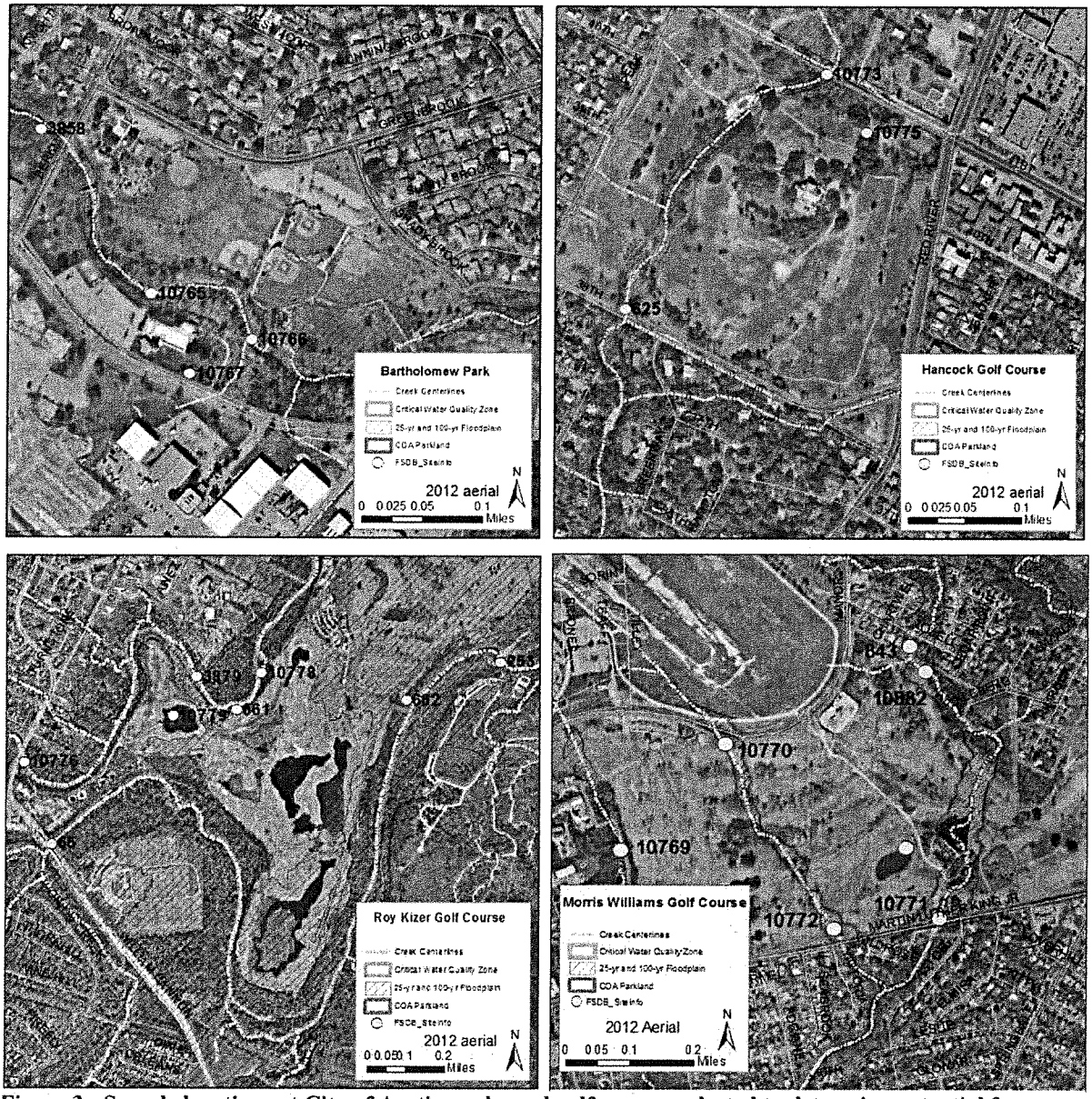


Figure 3: Sample locations at City of Austin parks and golf courses selected to determine potential for impacts to surface and spring water for the Phase 1 and Phase 2 sample events.

Not all sites from Phase 1 were sampled during the Phase 2 field efforts. Sites that were dropped following the Phase 1 sample events include:

- Hancock golf course sites were dropped from the Phase 2 study because the Phase 1 results indicated that the surface water upstream (Waller Creek) of the site was already too highly impacted by pollutant load to provide adequate resolution of contributing impacts within the site.
- Sites on Onion Creek were dropped from Phase 2 due to the large contributing drainage area and resulting high discharge of Onion Creek confounding interpretation of potential impacts.

As shown in Table 1, not all scheduled sites were sampled during all sampling events due to circumstances beyond control, including:

- Bartholomew Park was not sampled in July 2016 because application of reclaimed water was temporarily halted prior to and during the July event due to damages to the irrigation system. Sampling at Bartholomew Park resumed immediately following the repair and subsequent resumption of irrigation system operation.
- Williamson at Pleasant Valley (site 10776) was originally intended to represent upstream conditions for the segment of Williamson Creek at Clay/Kizer golf course. However, it was predominately dry during the sample period. This site was replaced by Williamson at Dove Springs (site 3879) because the stream began producing baseflow near this section of Roy Kizer Golf Course. Accurate total stream discharge was difficult to measure at this location due to a portion of the discharge flowing through the cobble/gravel alluvial substrate. Although Williamson at Dove Springs was used to represent upstream conditions for Williamson Creek, based on its location relative to the golf course it may have already been impacted (and/or creek discharge produced) by the migration of golf course irrigation water.

Water samples were evaluated for conventional field parameters, nutrients, metals, ions and isotopes (Table 2). In addition to these parameters, the periphyton from rocks (epilithon) was collected from rocks randomly selected from within the riffles upstream and downstream of irrigation areas within Bartholomew Park, Roy Kizer, and the mainstem of Tannehill Creek at Morris Williams. As per City of Austin Standard Operating Procedures, rocks were collected from undisturbed areas in the riffle downstream of the water sample and before other sampling had occurred. Relatively flat rocks were selected to ensure a consistent sample area. An area of 19.6 cm^2 was scraped from each rock and placed into a shallow collecting pan (WRE SOP 2013). Each rock was rinsed with deionized water to flush epilithon from the rock. Material from nine rocks in each riffle was composited in the collection pan and then placed into one darkened sample bottle and one regular sample bottle with H_2SO_4 for preservation. Samples were analyzed for Chorophyll *a*, pheophytin, total organic carbon, total phosphorus, ammonia, nitrate+nitrite, and total Kjeldahl nitrogen. Total nitrogen was calculated by taking the sum of nitrate+nitrite and total Kjeldahl nitrogen. Chlorophyll *a*, total organic carbon, total phosphorus, and total nitrogen were then converted to mg/m^2 from mg/L.

Rainfall (inches) for the Williamson and Tannehill watersheds was downloaded from RainVieux and plotted with the monthly volume of reclaimed water irrigated at each site for the project's duration (October 2014 to December 2015). Total nitrogen in the water column, benthic carbon to phosphorus ratios (C:P), benthic carbon to nitrogen ratios (C:N), and benthic chlorophyll *a* were plotted for each sampling event in order to visualize the difference between upstream and downstream concentrations over time.

Table 2: Parameter List

Location	Site number and name	Water Type	Phase 1 Parameters	Phase 2 Parameters
Bartholomew Park	3858 Tannehill Creek @ Berkman Dr	creek	L, F, RS, I	L, F, RS
	10766 Tannehill downstream Bartholomew Spring	creek	L, F, RS, I	L, F, RS
	10767 Bartholomew Park Irrigation water	irrigation	L, F, I	L, F
	10765 Bartholomew Spring	spring	L, F, I	L, F
Hancock Golf Course	10773 Waller Creek @ 45th	creek	L, F, RS, I	
	625 Waller Creek @ 38th	creek	L, F, RS, I	
	10775 Hancock Irrigation Water	irrigation	L, F, I	L, F
Morris Williams Golf Course	843 Tannehill @ Lovell	creek	L, F, RS, I	L, F, RS
	10771 Tannehill @ MLK	creek	L, F, RS, I	L, F, RS
	10770 Morris Williams Central Trib upstream	creek	L, F, I	L, F
	10772 Morris Williams Central Trib downstream	creek	L, F, I	L, F
	10768 Morris Williams Irrigation Pond	irrigation	L, F, I	L, F
	10769 Moose Lodge Spring	spring	L, F, I	L, F
	10882 Tannehill 340ft downstream of Lovell	creek		L, F
Roy Kizer Golf Course	10776 Williamson downstream Pleasant Valley	creek	L, F, RS, I	L, F, RS
	3879 Williamson Creek at Dove Springs Park	creek	L, F, RS, I	L, F, RS
	661 Roy Kizer Spring	spring	L, F, I	L, F
	10778 Williamson downstream Roy Kizer Spring	creek	L, F, RS, I	L, F, RS
	10779 Roy Kizer Reclaim Water Pond	irrigation	L, F, I	L, F
	10883 Roy Kizer Reclaimed Water Pipe	irrigation		L, F
	65 Onion Creek at William Cannon	creek	L, F, RS, I	
	253 Onion Creek at McKinney Falls upper pool	creek	L, F, RS, I	
	662 Driving Range Spring	spring	L, F, I	

**Parameters: L = Lab F=Field RS=Rock Scrapings I=isotopes

Parameters collected during the sampling events included "Field", "Lab", "Rock Scraping" and "Isotopes" as described below. Due to the expense, only Phase 1 samples include isotopic evaluation. Springs, reclaimed water source, and sites without appropriate substrate did not include rock scrapings.

FIELD
Conductivity
Dissolved Oxygen
Temperature
pH
Stream Discharge (flow)

ROCK SCRAPINGS
Nitrate+nitrite as N
Ammonia as N
Total Kjeldahl Nitrogen as N
Phosphorus as P
Total Organic Carbon (TOC)
Chlorophyll *a*
Pheophytin

LAB
Metals (Ca, Mg, Na, K, Sr)
Ions (Cl, F, SO_4)
Alkalinity (Calcium Carbonate)
Nitrate+nitrite as N
Ammonia as N
Total Kjeldahl Nitrogen as N
Phosphorus as P
Orthophosphorus as P
Total Organic Carbon (TOC)

ISOTOPES
Nitrogen-15/Nitrogen-14 Ratio
Oxygen-18/Oxygen-16 Ratio

Analysis Methods

Two general methods were used to determine whether reclaimed water has an impact on adjacent water resources: inferential statistical analysis and theory. Inferential statistical analysis looks solely at the data and tests whether any structure in the data is from a disturbance or is merely due to random chance. Theory comes from the application of first principles and describes the mechanism by which the disturbance manifests itself. Thus, theory can not only predict whether an impact can be detected, but can also be used to estimate the magnitude of its impact. Additionally, any data collected can be used to validate the theory. In combination, these two methods can demonstrate a preponderance of evidence with inferential statistics providing a potential relationship among the data and the theory pointing to the likely causation of that relationship.

Inferential Statistical Analysis

To test whether there was an impact to the receiving water from reclaimed water irrigation; paired differences were calculated for each stream segment receiving reclaimed water. That is, for each site visit, concentration results from the downstream samples were subtracted from concentration results from the upstream samples. The average and standard deviation for these paired differences were calculated and then used to compute confidence intervals. This technique is used to improve the precision of the data by eliminating an additional source of variation (i.e. the variation that comes from taking samples at different times of the year).

Given paired differenced confidence intervals at each stream segment, one may compute the probability that the mean paired difference at each stream segment is equal to zero (i.e. not impacted). Thus, paired differences were calculated for each stream segment and for each analyte and ratio of nutrient concentrations (Gelman and Hill 2007).

Theory

A conceptual model can be used to express how a potential mechanism (e.g. irrigating reclaimed water) might impact an adjacent receiving stream. A plausible conceptual model might invoke mixing upstream water with a distributed loading of this irrigated water along the length of the creek to yield the downstream water composition. This model is graphically represented in Figure 4.

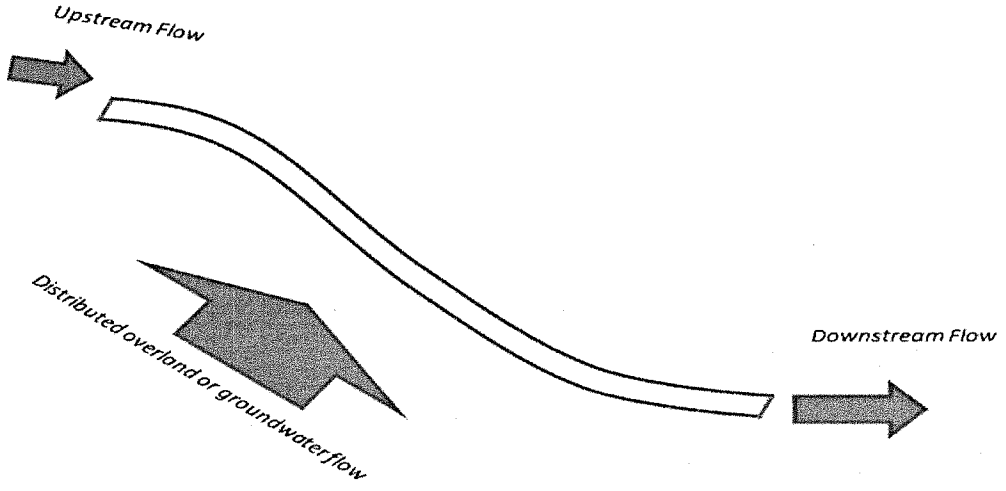


Figure 4: Schematic of reclaimed water irrigation conceptual model.

Applying Conservation of Mass, the mass entering a system must equal the mass exiting the system, assuming no storage within a stream segment. Thus, this model can be represented by:

Upstream mass flow rate + Distributed mass flow rate = Downstream mass flow rate (1)

or:

$$Q_{up} \cdot C_{up} + Q_{ReWW} \cdot C_{ReWW} = (Q_{up} + Q_{ReWW}) \cdot C_{down} \quad (2)$$

where Q_{up} = upstream flowrate (ft^3/s);
Q_{ReWW} = reclaimed water flowrate (ft^3/s);
C_{up} = upstream concentration (mg/L);
C_{ReWW} = reclaimed water concentration (mg/L); and
C_{down} = downstream concentration (mg/L).

Rearranging to solve for C_{down}:

$$C_{down} = F \cdot C_{up} + (1 - F) \cdot C_{ReWW} \quad (3)$$

where

$$F = \frac{Q_{up}}{(Q_{up} + Q_{ReWW})} \quad \text{and} \quad 1 - F = \frac{Q_{ReWW}}{(Q_{up} + Q_{ReWW})}$$

From this, one can see that the downstream concentration is a flow-weighted mixture of upstream and reclaimed water concentrations. If there is no impact, then C_{down} would equal C_{up}, and F would equal unity. Unfortunately, determining F from field measurements of flow may prove difficult over the course of a season due to fluctuations in the flow. Furthermore, estimating the amount of Q_{ReWW} that contributes to the stream requires considerable assumptions on irrigation application rate. Additionally, there may be other influences on the stream, such as groundwater. For example, if there was an additional source to the stream (such as from groundwater) the conceptual model would not change too drastically. There would be an F_1 for the upstream contribution, an F_2 for the groundwater contribution, and a $(1\text{-}F_1\text{-}F_2)$ for the reclaimed water. However, Equation 3 represents a simple and first iteration of a model, and it will be shown that this simplistic model may be a fair representation of the creek systems in the parks and golf courses.

To arrive at a practical (and long term) estimate of the impact from reclaimed water, it helps to look at the concentrations of the sampled downstream water relative to the upstream and reclaimed water concentrations. Equation 3 establishes that the downstream concentration is, in effect, a mixture experiment. That is, it is postulated that the downstream concentration is a mixture of upstream and reclaimed water concentration. Thus, data collected on the downstream concentration can be used to quantify the extent of this mixture. However, a suite of analytes, rather than a single constituent, is sampled in the surface water. Determining how this suite interacts with each other and their environment is difficult. To overcome this complexity, the geochemical computer program, pHREEQc (pH-REdox-EQulibrium) was used to simulate the chemical mixing of the upstream waters with reclaimed water under equilibrium conditions. The interaction of reclaimed water with the soil (itself a mixture of calcite and montmorillonite) was also simulated in an attempt to more accurately mimic the physical processes of the reclaimed water.

Using this approach, the model predicted downstream concentrations for each of the nine surface water analytes, given the upstream and reclaimed water data at each park. The goal was to determine which fraction, F, corresponded to the downstream surface water concentrations for all nine surface water analytes. Then, that fraction was compared to actual flow measurements, Q_{up} and $Q_{up}+Q_{ReWW}$, to validate the model. An additional validation using Piper plots is used to show the influence of downstream samples to either upstream samples or reclaimed water samples. The pHREEQc model, however, does

not quantify the amount of nutrient (or chemical ion) uptake of algal biomass in the creek. However, the amount of chlorophyll *a* and any nutrient ratios can serve as an indication to the presence of this uptake and to the implication of an impact on the stream.

The conceptual model provides a framework with which to examine all of the data. One can postulate four different hypotheses using this overlying framework that can be tested using the data:

- Hypothesis 1 is that there is no impact on the stream. That is, the reclaimed water has been effectively absorbed into the soil without migrating to the stream. Under this scenario, inferences from the paired difference analyses of the surface water concentrations and the benthic ratios show no impact, and F is equal to, or approximately 1 (i.e. $F \simeq 1$).
- Hypothesis 2 is that there is an impact and can be seen in one of two potential data sets, the surface water data or the benthic ratio data. Thus, Hypothesis 2 is actually made up of two sub-hypotheses.
  - Hypothesis 2a is that there is an impact, but it is only on the surface water. Therefore, the nutrients have yet to be converted to algal biomass due to insufficient light conditions. Inferences from the paired difference analyses would not reveal an impact in the benthic ratios. Rather, the paired difference analyses would show an impact in the surface water and F is less than 1(i.e. $F < 1$).
  - Hypothesis 2b is that there is an impact, but it is only on the benthic substrate. Under this supposition, the reclaimed water irrigation is impacting the surface water, but algae are converting the composition of the water to benthic form. $F < 1$, but this can only be inferred from the paired differences in the nutrient ratios and cannot be inferred from the pHREEQc model.
- Hypothesis 3 is that an additional source is interfering with any impacts of the reclaimed water on the surface water; thus, confounding any inferences from the paired differences. Also, the flow ratio, *F*, would not be consistent among the nine surface water analytes. In this case, samples from this additional source would need to be obtained and the conceptual model (and pHREEQc model) would require a re-specification. A failure of the data sets to inform on the plausibility of either Hypotheses 1 or 2 may point to this Hypothesis.

The data from the cumulative sample periods of Phase 1 and Phase 2 are assessed under this framework to determine the presence or absence of an impact.

Results and Discussion

A cursory review of the data indicates that most downstream sites are higher in nitrogen than upstream sites, indicating that the creeks may be experiencing an impact from the application of high nutrient reclaimed water irrigation. However, it is important to thoroughly explore the data to ensure that the differences are statistically significant and can be attributed to the potential source.

The Methods section of this report describes an analytical model that provides three exclusive hypotheses to explore the data and explain the phenomena (i.e. characterize the change in the composition of downstream surface water). This section presents the empirical data and describes how it informs the possibility of one of the three competing hypotheses. The results of the sampling are evaluated in the context of four primary data sets. These sets are presented in the following order to substantiate the presence of an impact in the surface water, the percent contribution of the impact in the surface water, and characterize the impact in the surface water as follows:

1. **Confidence Intervals** of the mean paired differences in the surface water are depicted as bar graphs to serve as a preliminary indication of whether or not there is an impact to each of the creeks (Figures 5-12) and can be seen in tabular form in Appendix A. Additionally, confidence intervals of the mean benthic ratios of C:N, C:P and chlorophyll *a* (Figures 13-15) are presented

as further evidence of a potential impact as benthic communities uptake nutrients from the water column and may indicate impacts which might otherwise be hidden in the water column.

2. The **Geochemical pHREEQc model** estimates the percent contribution that the downstream water is influenced by the upstream water (Figures 16-19).

3. **Piper plots** are graphical depictions that distinguish different types of source waters and can be used to identify changes, trends, and mixing of ion compositions (Figures 21- 23).

4. **Total nitrogen along with benthic stoichiometry differences** are depicted in order to visualize differences in chemical and biological water quality from the potential impact (Figures 30-33).

The four data sets described above can be linked to the four hypotheses in the following manner:

- **Hypothesis 1** would be disproven if any of the confidence intervals (either surface water or benthic ratios) show a significant difference from upstream to downstream. That is, if the confidence intervals for the mean paired difference in the surface water or periphyton do not encompass zero, then that is an indication of an impact on the surface water.

- The Geochemical pHREEQc model can be used to examine the plausibility of **Hypothesis 2a and 2b**. The model provides an estimate of the percent contribution of upstream water and reclaimed water to the downstream water. If this percent contribution is consistent among a majority of the constituents sampled then that not only points to the source of the disturbance in the creek, but also to the amount of influence in the creek from reclaimed water. Further strength is given to this hypothesis if the analysis of confidence intervals also shows a non-zero confidence interval for each constituent in the creek. Flow measurements and piper plots can be used to validate this hypothesis.

- Finally, if the analysis provides insignificant results without a clear signal, then that may suggest **Hypothesis 3** (i.e. an alternative source of the impact) which would require more studies to determine the alternative source.

Confidence Intervals of the Mean Paired Differences

Confidence intervals of the mean paired difference in surface water parameters for each creek are presented in Figures 5 through 12. Bartholomew Park is shown first (Figures 5 and 6), followed by Morris Williams at the mainstem (Figures 7 and 8), Morris Williams at the central tributary (Figures 9 and 10), and finally Roy Kizer at Williamson Creek (Figures 11 and 12). The tabular results from this analysis can be found in Appendix A. Nitrate+nitrite is significantly higher in the downstream surface water sample (Figure 5) while there is a significant increase in the magnesium, potassium, sulfate, alkalinity, chloride, sodium, and calcium ions in the downstream surface water (Figure 6) at Bartholomew Park. The positive differences in these analytes imply surface water impacts from the reclaimed water irrigation at Bartholomew Park.

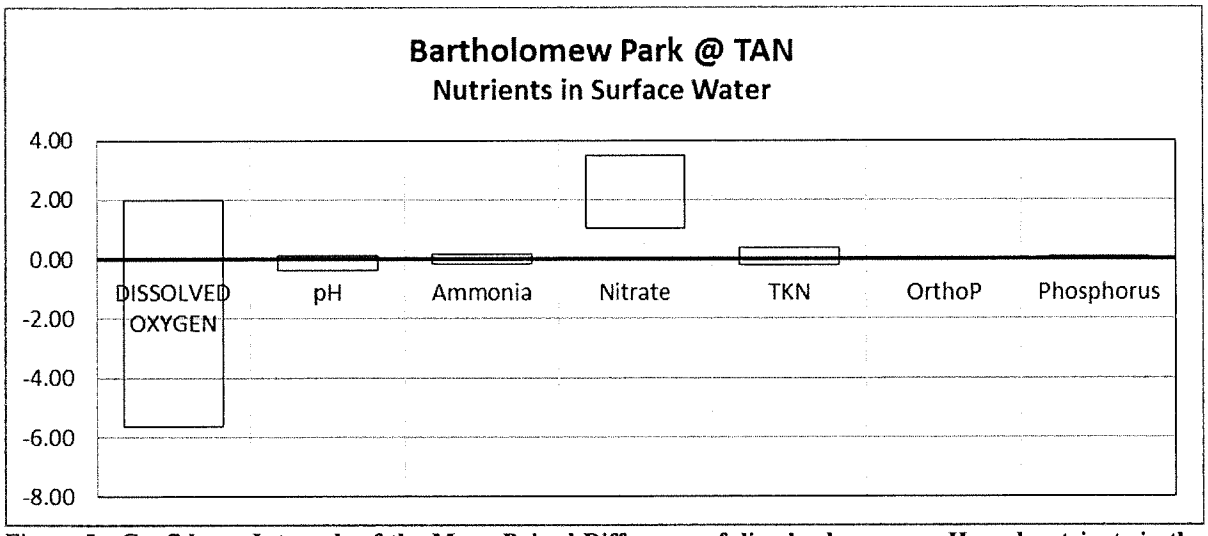


Figure 5: Confidence Intervals of the Mean Paired Difference of dissolved oxygen, pH, and nutrients in the water column collected upstream and downstream of Bartholomew Park. Nitrate was significantly higher in Tannehill Creek downstream of Bartholomew Park.

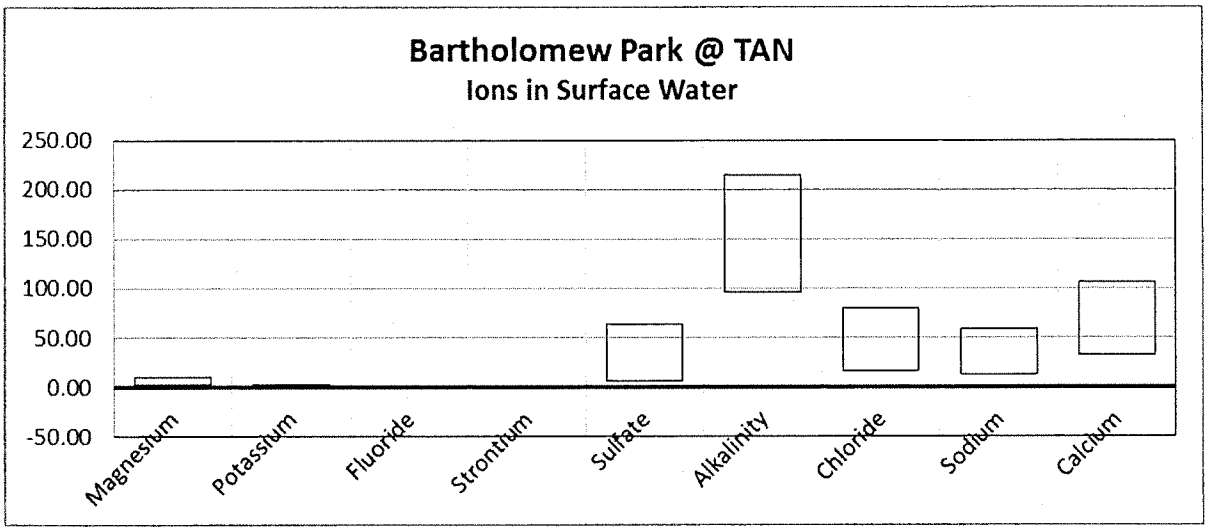


Figure 6: Confidence Intervals of the Mean Paired Difference of ions in the water column collected upstream and downstream of Bartholomew Park. Magnesium, potassium, sulfate, alkalinity, chloride, sodium, and calcium were all significantly higher in Tannehill Creek downstream of Bartholomew Park.

Figures 7 and 8 indicate that there is statistically no difference for most of the nutrients and ions in the surface water at Morris Williams in the mainstem of Tannehill Creek with three exceptions. Alkalinity and calcium ions are at concentrations *less* than upstream samples. TKN is at concentrations slightly higher than upstream. Thus, this particular analysis does not indicate a discernable impact from reclaimed water[1]. However, under the framework stated in the Methods section, there remains the possibility that any impact has been latent in the benthic algae data (Hypothesis 3) or is being diluted by

[1] Given the number of comparisons made in this report, a small but non trivial number of those comparisons may be expected to give a Type I error. It is possible, but cannot be verified with current data, that TKN is a false positive.

groundwater influence (Hypothesis 4). The most likely hypothesis for this creek will be determined from results for the pHREEQc model in the next section.

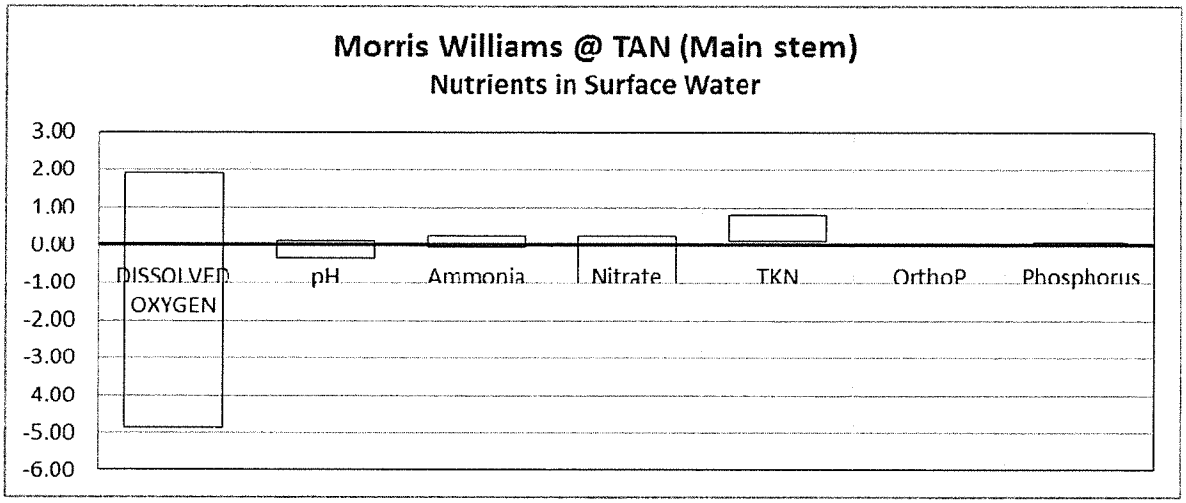


Figure 7: Confidence Intervals of the Mean Paired Difference of DO, pH, and nutrients in the water column collected upstream and downstream of Morris Williams. Of these parameters, only TKN was significantly higher in Tannehill Creek downstream of Morris Williams.

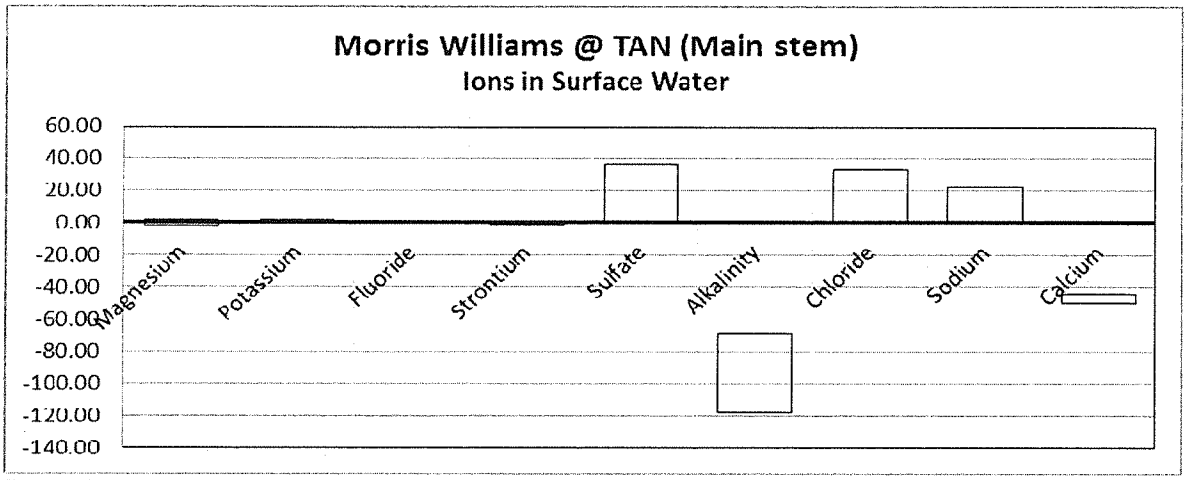


Figure 8: Confidence Intervals of the Mean Paired Difference of ions in the water column collected upstream and downstream of Morris Williams. Alkalinity and calcium were significantly lower in Tannehill Creek downstream of Morris Williams.

Similarly to Morris Williams mainstem of Tannehill Creek, Figures 9 and 10 below show that for the Morris Williams central tributary, differences between downstream and upstream samples were insignificant, with the exception of pH and nitrate.

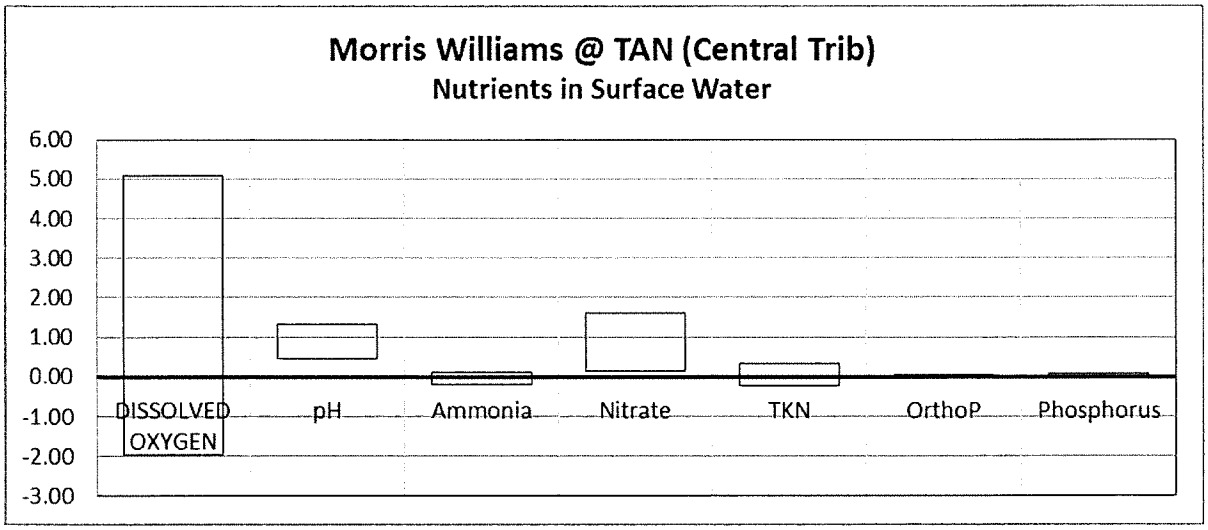


Figure 9: Confidence Intervals of the Mean Paired Difference of dissolved oxygen, pH, and nutrients in the water column collected upstream and downstream of Morris Williams within a tributary running through the golf course. Out of these parameters, only pH and nitrate were significantly higher in the tributary downstream of Morris Williams.

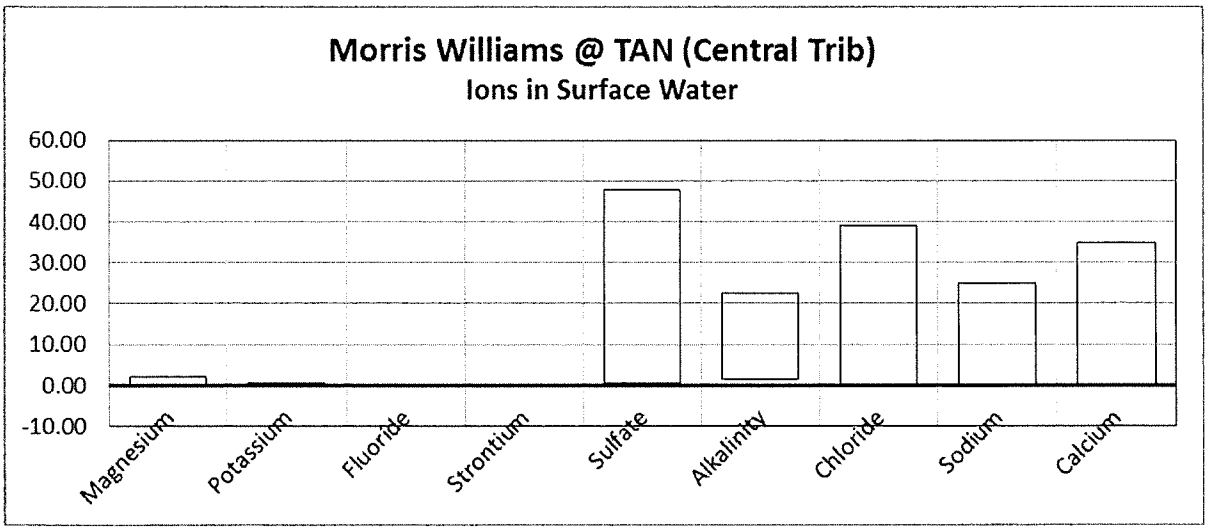


Figure 10: Confidence Intervals of the Mean Paired Difference of ions in the water column collected upstream and downstream of Morris Williams within a tributary running through the golf course. None of these parameter were significantly different in the tributary downstream of Morris Williams.

Results from Roy Kizer on Williamson Creek (Figures 11 and 12) showed impacts similar to that of Bartholomew Park. Nitrate+nitrite concentrations in downstream samples were higher than upstream samples and most of the downstream samples showed elevated ion concentrations compared to upstream indicating that there was a statistically significant impact to the surface water

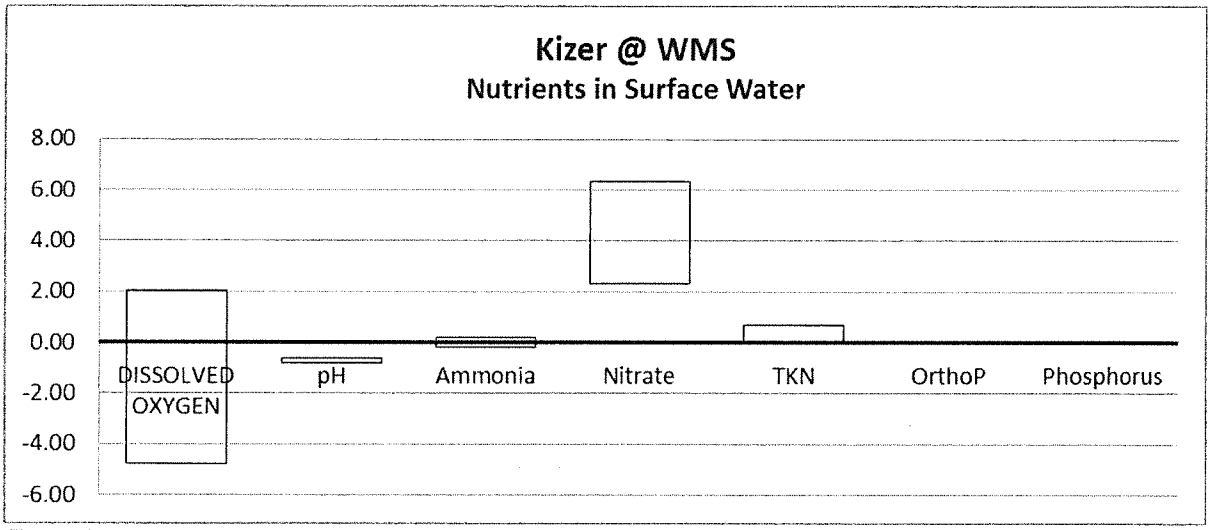


Figure 11: Confidence Intervals of the Mean Paired Difference of dissolved oxygen, pH, and nutrients in the water column collected upstream and downstream of Roy Kizer. Nitrate was significantly higher in Williamson Creek downstream of Roy Kizer while the pH was significantly lower.

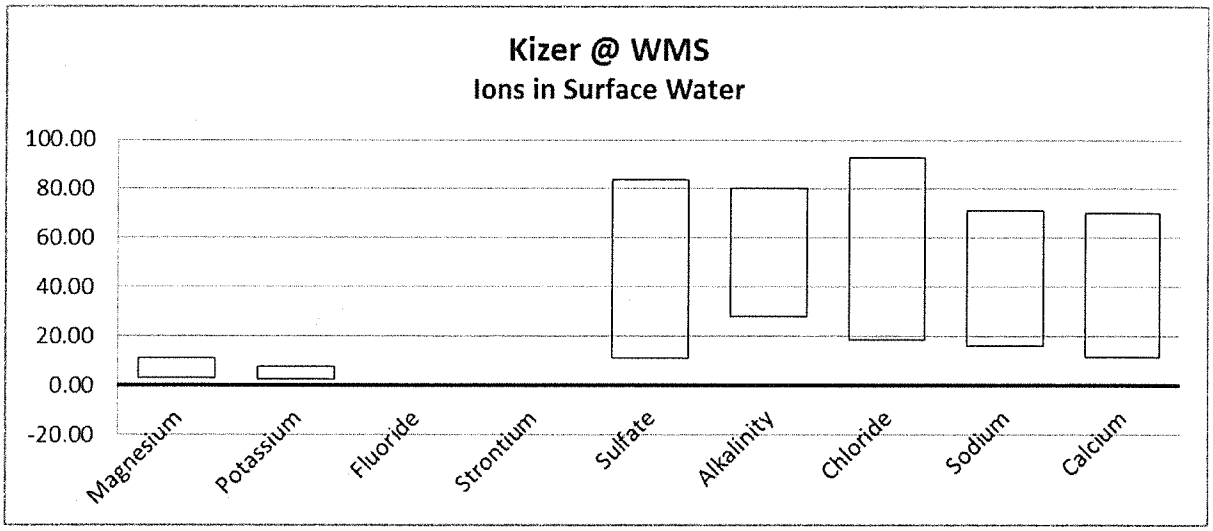


Figure 12: Confidence Intervals of the Mean Paired Difference of ions in the water column collected upstream and downstream of Roy Kizer. Magnesium, potassium, sulfate, alkalinity, chloride, sodium, and calcium were significantly higher in Williamson Creek downstream of Roy Kizer.

Based on the confidence intervals of the mean paired difference in surface water parameters for each creek, there appears to be statistically significant differences in samples taken between upstream and downstream locations at Bartholomew Park and at Roy Kizer. Differences in surface water samples taken between upstream and downstream samples at the two tributaries in Morris Williams were more ambiguous. However, the next set of confidence intervals to be discussed (regarding the benthic ratios) reduces that ambiguity.

None of the creeks sampled showed any differences in fluoride or strontium concentrations. It is suspected that fluoride, which is a negatively charged ion, is only attenuated by vegetation, since cation ion exchange with clay in soil is unlikely due to the negative charge of clay. Plant uptake studies using fluoride-rich irrigation water show that fluoride accumulates in various plant parts. The root accumulates most of the fluoride supplied through irrigation water (Pollick 2004).

Confidence Intervals of the C:P, C:N and benthic chlorophyll *a*

Results for the benthic C:P, benthic C:N, and benthic chlorophyll *a* content of samples collected upstream and downstream of irrigation sites are displayed in Appendix C with additional graphs in Appendix D. Benthic C:P significantly decreased from upstream to downstream as demonstrated by a mean paired difference confidence interval that did not include zero (Table 3). There was no significant difference from upstream to downstream for benthic C:N or benthic chlorophyll *a* as the individual confidence intervals each contained zero.

Table 3: Mean paired difference (95% confidence interval) in the benthic C:P, benthic C:N, and benthic chlorophyll *a* content computed downstream to upstream. The probability that the difference is strictly positive or negative is also included. A decrease in the benthic ratios or increase in the chlorophyll *a* content would show degradation downstream.

Parameter	Mean Difference	95% CI	Prob > 0	Prob < 0
Carbon to Phosphorus	-6.48	(-10.49,-2.76)	--	1.0
Carbon to Nitrogen	-0.71	(-1.96,0.38)	--	0.89
Chlorophyll *a*	16.72	(-23.26,53.58)	0.821	--

The decreasing pattern in the benthic C:P (Figure 13A) suggests an increase in phosphorus load to the creek which was not detectable in the water column, possibly due to nutrient uptake by the benthic algae. This is most pronounced in samples collected in the mainstem of Tannehill creek upstream and downstream of the Morris Williams golf course (Figure 13B).

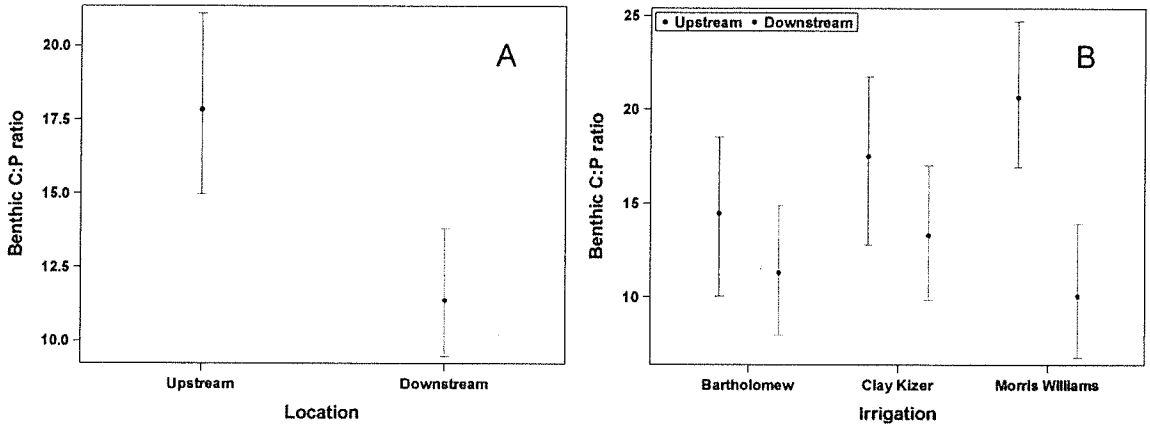


Figure 13: The mean and 95% Confidence Interval of benthic Carbon (C) to Phosphorus (P) in upstream and downstream samples pooled from all reclaim irrigation sites (A), and partially pooled for distinction between each reclaimed irrigation site (B). The benthic C:P was significantly lower downstream of reclaimed irrigation sites.

There was no significant pairwise difference in benthic C:N upstream and downstream of the reclaimed water irrigation sites. There was a decreasing pattern in the benthic C:N (Figure 14A) which would indicate degradation downstream of the irrigations sites and the probability of the difference to be below zero was 0.89 based on the data collected. This suggests that the decreasing pattern might be real and not a random phenomenon. Given several more sampling events, the pairwise difference in C:N upstream and downstream of the irrigations sites might be determined to be significant.

The variability for benthic C:N in all upstream site locations was much higher than the variability at downstream locations (Figure 14B). This was most likely due to a high benthic C:N collected upstream of Clay Kizer in October 2014. This would impact the variability at all upstream sites because the data is partially pooled and not analyzed separately.

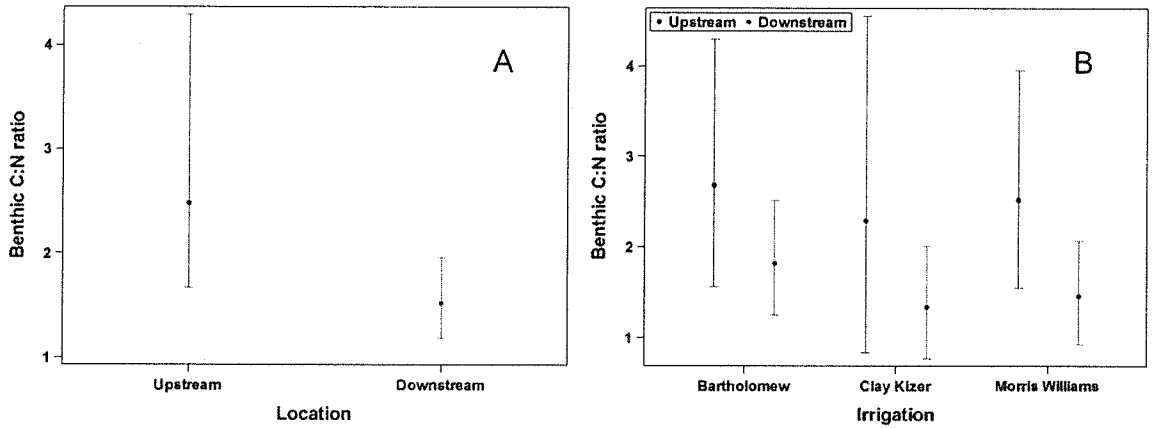


Figure 14: The mean and 95% Confidence Interval of benthic C:N in upstream and downstream samples pooled from all reclaimed irrigation sites (A), and partially pooled for distinction between each reclaimed irrigation site (B). There was no significant pairwise difference in benthic C:N upstream to downstream.

There was not a significant difference in benthic chlorophyll *a* (mg/m^2) upstream to downstream of the reclaimed water irrigation sites. While it appeared that there were higher chlorophyll *a* concentrations downstream of irrigation sites when all of the data was pooled (Figure 15A), the parameter was highly

variable and no clear pattern was discernible based on pairwise comparisons. The probability for chlorophyll *a* concentrations to be higher downstream of the irrigation sites was only 0.821 and it is unclear what inference further sampling would lead to without the inclusion of more explanatory variables. Chlorophyll *a* concentrations at Bartholomew showed more signs of degradation than did the other two irrigation sites (Figure 15B). The Bartholomew Park irrigation site may be impacting Tannehill Creek upstream of the Morris Williams golf course irrigation site.

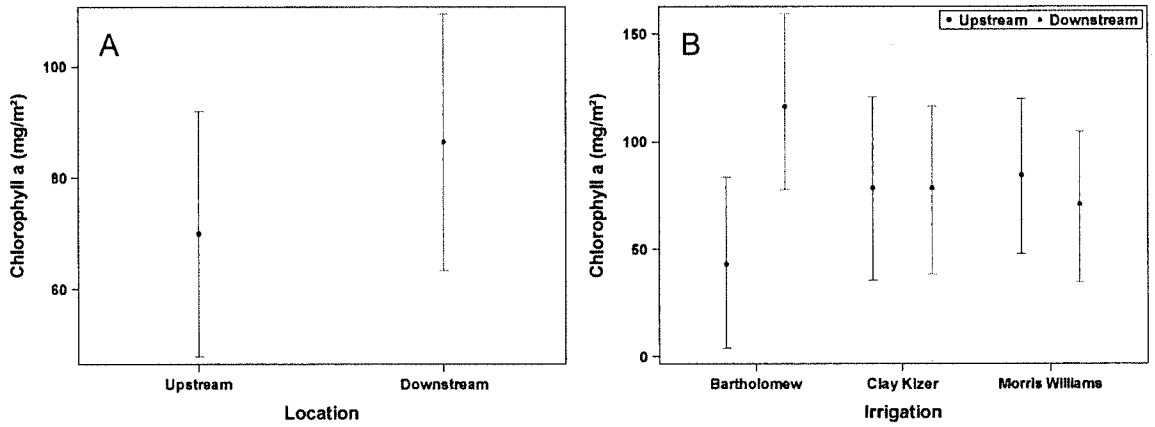


Figure 15: The mean and 95% Confidence Interval of benthic algae chlorophyll *a* (mg/m²) in upstream and downstream samples pooled from all reclaimed irrigation sites (A), and partially pooled for distinction between each reclaimed irrigation site (B). There was no significant pairwise difference in benthic chlorophyll *a* upstream to downstream.

Geochemical pHREEQc Model

Analysis of the confidence intervals on Bartholomew Park and Roy Kizer infers an impact to surface water from reclaimed water irrigation. If this is true, it should be supported by pHREEQc modeling. The overarching framework postulated in the Methods section suggests that any contribution to the downstream samples originate from a flow-weighted mixture of two sources: upstream water and reclaimed water. This section examines the influence of these two samples on the downstream sample. Medians of the upstream and reclaimed water concentration samples were input into the model (see Appendix B for the values). Table 4 shows an estimate of the downstream concentration under either solely upstream influenced conditions or under solely reclaimed water influenced conditions for the nine key ions collected in the surface water.

Table 4: Estimated downstream concentrations (mg/L) from the pHREEQc model under solely upstream influenced conditions and solely reclaimed water influenced conditions.

	Cl^-	Na^+	Mg^{+2}	K^+	SO_4^{-2}	F^-	NO_3^-	Alk	Ca^{+2}
Bartholomew Park @ TAN									
Upstream	15.5	12.5	3.6	2.3	13.9	0.3	0.1	108	44.4
ReclaimedWW	113.6	120.2	25.1	14.4	134.6	1.9	29.1	382	161.6
Morris Williams @ TAN (mainstem)									
Upstream	34.0	25.4	5.4	1.9	30.2	0.3	0.7	243	102.0
ReclaimedWW	113.0	120.7	25.4	14.4	134.6	1.9	29.1	382	161.1
Morris Williams @ TAN (central tributary)									
Upstream	16	19.7	4.6	2.6	10.8	0.4	0.3	210	72.2
ReclaimedWW	113.0	120.7	25.2	14.4	134.6	1.9	29.1	382	158.4
Roy Kizer @ WMS									
Upstream	31.0	20.0	7.3	2.2	33.2	0.28	0.7	200	83.2
ReclaimedWW	132.1	84.2	14.5	5.4	125.9	0.43	9.0	282	187.7

If the conceptual model is close to reality, then the concentrations of the downstream samples should be between the upstream and reclaimed water concentrations bounds, inclusively, given in Table 4 for each ion for each park. Downstream samples with concentrations close to those of upstream samples would be mostly upstream influenced, whereas downstream samples with concentrations close to those of the model-predicted reclaimed water samples would be mostly influenced by reclaimed water.

Applying the conceptual model also gives the advantage that the fractional amount of influence, F, from each source can be inferred. The results from the model can be superimposed on the confidence intervals of the mean concentration for each constituent under upstream, downstream, and reclaimed water samples in Bartholomew Park (Figure 16).

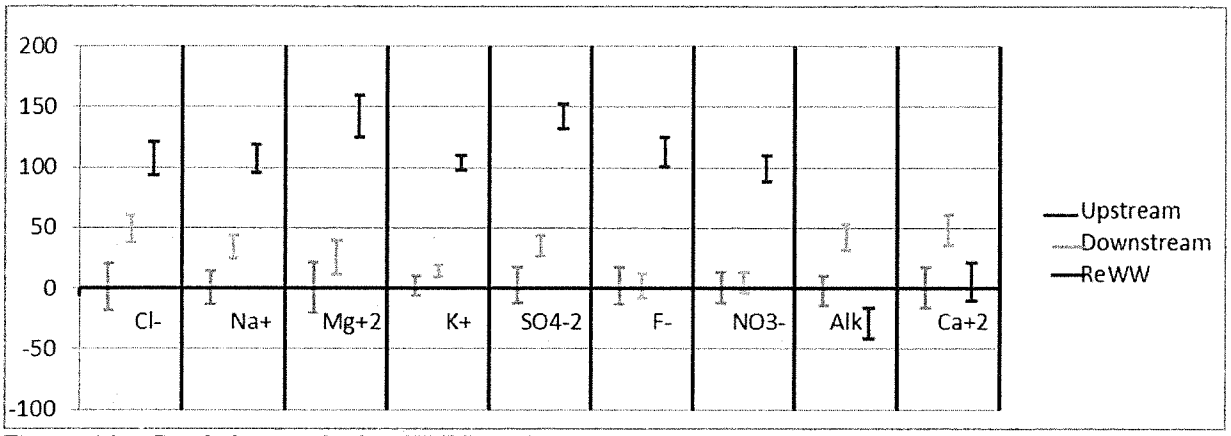


Figure 16: Bartholomew Park pHREEQc Results. The blue, grey, and red bars represent the 99% confidence intervals of the mean concentration for each analyte. Confidence intervals are standardized to a scale of 0 to 100 where 0 denotes the pHREEQc model prediction of the upstream concentration and 100 signifies the pHREEQc model prediction of the reclaimed water after its interaction with the soil. With the exception of fluoride and nitrite, the confidence intervals of the nine downstream constituents (grey bars) encompass approximately a score of 40 on the y-axis. This indicates a 40% contribution from reclaimed water.

As an example to aid interpretation, the pHREEQc model for Bartholomew Park predicted that if only upstream waters were influencing the downstream waters, the downstream samples would have a chloride concentration of 15.5 mg/L (see Table 4) or a standardized score of 0 (i.e. 0% reclaimed water) (see Figure 16). If reclaimed water was the only influence on the downstream sample, then the downstream samples would have a chloride concentration of 113.6 mg/L or a standardized score of 100 (i.e. 100% reclaimed water). The confidence intervals on the mean concentrations for the upstream and reclaimed water samples include (as it should) the 0 and 100 scores, respectively. The confidence intervals of the mean concentrations of the downstream samples, however, all cluster around the score of approximately 40. Thus, one may infer that the downstream waters are composed of 40% reclaimed water and 60% upstream water, which is consistent with paired difference results. Furthermore, flow measurements taken during the sample visits indicate that F, the fraction of upstream to downstream flow, averages at about 60%. This is consistent with the pHREEQc results and verifies an impact to the stream at Bartholomew Park (Figure 16).

The Bartholomew Park pHREEQc model predicted alkalinity and calcium concentrations of 382 mg/L and 162 mg/L, respectively, for a purely reclaimed water downstream sample, when the actual reclaimed water sample had concentrations of 28 mg/L and 50 mg/L, respectively. This may indicate that as the reclaimed water is moving through the soil, it is dissolving the calcium in soil and transporting this

calcium with it. This may explain why the alkalinity and calcium concentrations in the downstream samples are much higher than that of the upstream or reclaimed water concentrations. Similarly, the pHREEQc model predicted that magnesium concentrations in purely reclaimed water downstream sample would be much lower than that of the actual reclaimed water concentration. This indicates that as the reclaimed water is moving through the soil, it is losing magnesium.

Fluoride and nitrate+nitrite concentrations in the downstream sample do not appear to adhere to the pattern predicted for other constituents at Bartholomew Park. One explanation may be the limited nature of the pHREEQc modeling attempted for this report. Nitrate+nitrite will undergo a conversion to another species that was not input into the model. For fluoride, it is hypothesized that the soil will adsorb the fluoride to make fluorite using a reaction not yet programmed into pHREEQc.

With Bartholomew Park results presented in detail as a case study, modeling results for the remaining creeks can be discussed briefly. The impact from the reclaimed water on the surface water of Morris Williams is either subdued owing to large variability in the samples or non-existent (Figure 17-18). The confidence intervals also show that the surface water in the main stem is losing alkalinity and calcium as it advances downstream. Alkalinity and calcium in the central tributary, on the other hand, are highly variable with both downstream and upstream samples showing similar concentrations. Flow measurements indicate that estimates of F, the fraction of upstream to downstream flow, is about 90%, which may explain the lack of an impact on surface water on the main stem. Thus, nutrient ratios for this park may be needed to ascertain an impact.

For the central tributary, however, flow upstream is greater than downstream for two of the four site visits removing the possibility of verifying the actual flow measurements with the pHREEQc results. This variation of flow in time also emphasizes that flow is a confounding factor in the analysis for this creek. Since pHREEQc gave consistent results of F, groundwater influences may be ruled out.

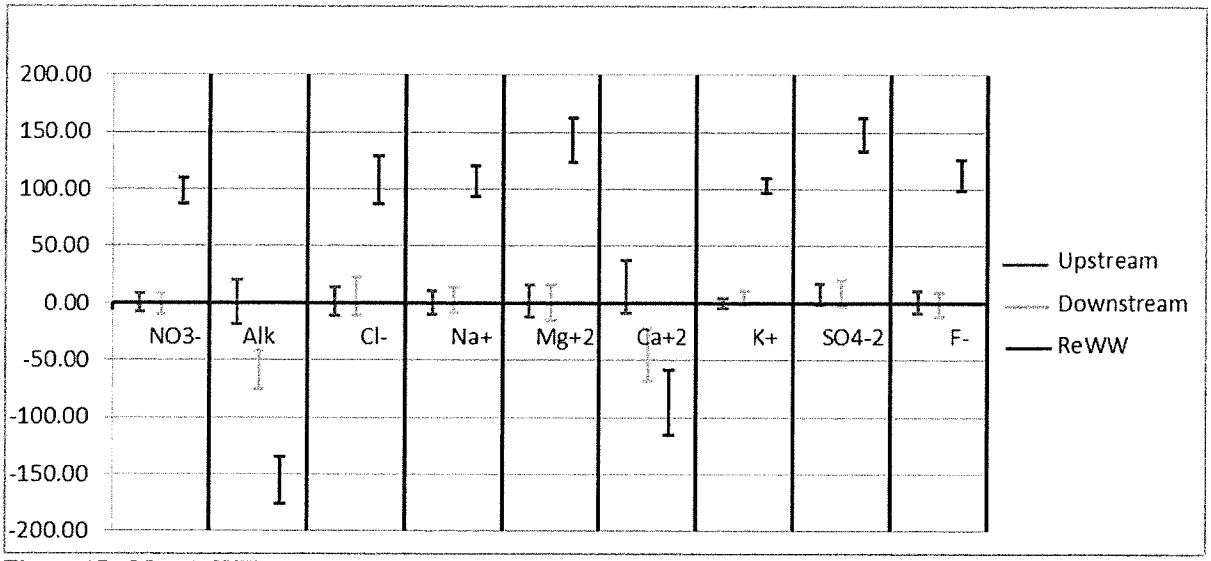


Figure 17: Morris Williams (main stem) pHREEQc Results. The blue, grey, and red bars represent the 99% confidence intervals of the mean concentration for each analyte. Confidence intervals are standardized to a scale of 0 to 100 where 0 denotes the pHREEQc model prediction of the upstream concentration and 100 signifies the pHREEQc model prediction of the reclaimed water after its interaction with the soil. With the exception of alkalinity and calcium, the nine downstream constituents (grey bars) contain a score around zero. This indicates a negligible to small impact on the downstream concentrations from reclaimed water. Benthic ratios are needed to determine the presence of an impact.

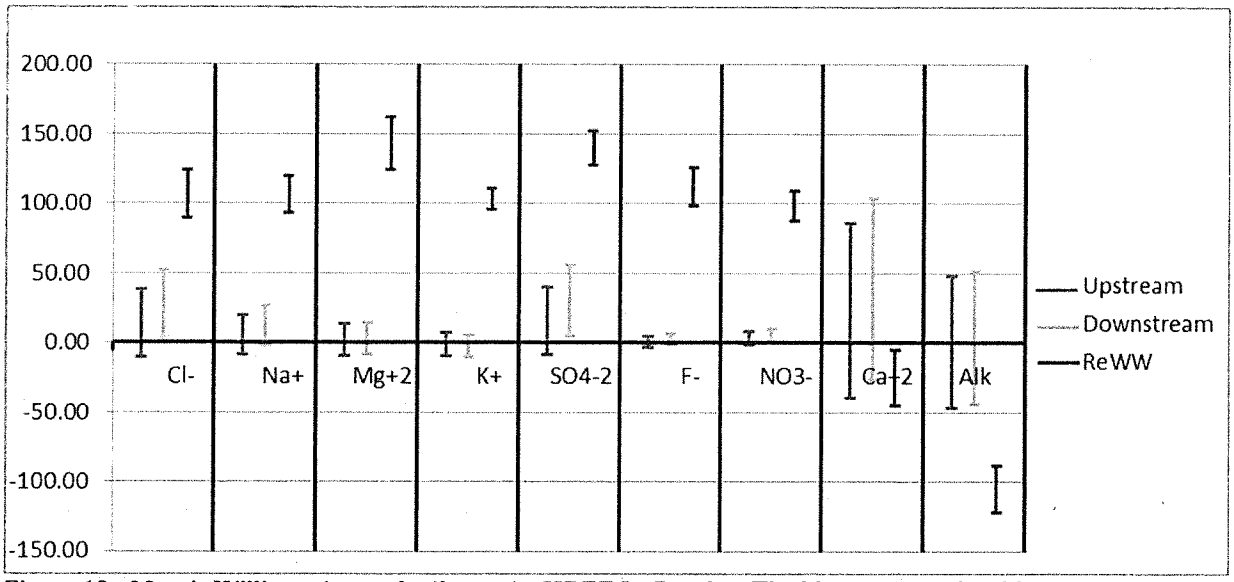


Figure 18: Morris Williams (central tributary) pHREEQc Results. The blue, grey, and red bars represent the 99% confidence intervals of the mean concentration for each analyte. Confidence intervals are standardized to a scale of 0 to 100 where 0 denotes the pHREEQc model prediction of the upstream concentration and 100 signifies the pHREEQc model prediction of the reclaimed water after its interaction with the soil. The downstream constituents (grey bars) have considerable variability making any assessment of impact on the creek difficult. Benthic ratios are needed to determine the presence of an impact.

The impact of the reclaimed water on surface water at the Roy Kizer golf course was similarly assessed (Figure 19). Potassium shows the clearest indication of an influence from reclaimed water at around 30%. This estimate of 30% is certainly within the bounds for chloride, sodium, and magnesium; however, the variability for these analytes dominates any inference that can be made from it. Again, the flow measurements are not consistent across the sampling visits. This makes verification of the pHREEQc model unfeasible. This variation in flow may be contributing to the variability at the site. There exists some variation in the *F* inferred from pHREEQc (Figure 19), which is pointing to a groundwater influence. But given that the paired differences showed an impact in the surface water, this groundwater influence may be considered small relative to the influence of reclaimed water.

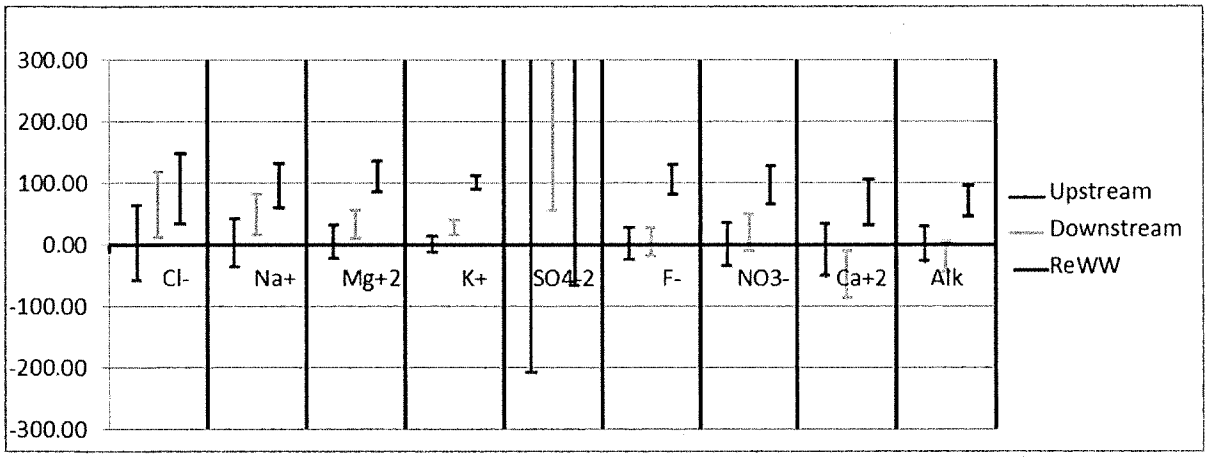


Figure 19: Roy Kizer pHREEQc Results. The blue, grey, and red bars represent the 99% confidence intervals of the mean concentration for each analyte. Confidence intervals are standardized to a scale of 0 to 100 where 0 denotes the pHREEQc model prediction of the upstream concentration and 100 signifies the pHREEQc model prediction of the reclaimed water after its interaction with the soil. The downstream constituents (grey bars) show about a 30% impact due to reclaimed water for chloride, sodium, magnesium, and potassium. The variability in sulfate is extensive and precludes an inference, while downstream concentrations of fluoride and nitrite characteristically show no influence. Downstream concentrations of calcium and alkalinity also appear to show little to no influence due to reclaimed water

Piper Plots

Piper plots, or triangle plots, are typically used to determine the hydrogeochemical facies or classification of natural water. In natural water, the ion composition is controlled by local lithology, the duration of the water-rock and the water-soil interactions, and natural attenuation. In the Austin area, groundwater and surface water is classified as a calcium-bicarbonate hydrogeochemical facies due the carbonate geology that dominates most of the area.

Natural, native groundwater with calcium-bicarbonate hydrogeochemical facies will plot on the left hand side of the diamond-shape area of a piper plot. In contrast, reclaimed water from Austin's municipal supply is considerably higher in sulfate and chloride, and will consequently plot on the right hand side of the diamond-shaped area (Figure 20). The mixing of two distinctly different water types will result in a shift in the ion composition at an impacted monitoring site. In a piper plot, mixing would be indicated if downstream points plot in-between the natural waters on the left and reclaimed water on the right. The magnitude and direction of the linear shift of creek water facies toward the reclaimed water facies would indicate the degree of mixing with or influence from the reclaimed water. Larger shifts will indicate greater amounts of reclaimed water mixing with the natural groundwater or surface water. The magnitude of the shift is also influenced by antecedent weather conditions, creek flow, and irrigation rates. For example, the shift can be muted during high rainfall periods because irrigation rates generally decrease and rainwater runoff has lower concentration of ions.

The mean ion concentrations for calcium, magnesium, potassium, sodium, bicarbonate, chloride, and sulfate at the upstream, the downstream, and the reclaim water monitoring sites are characterized with a piper plot (Figure 20). Each point shown in the diamond-shape and triangular areas is a graphical representation of all ion concentrations reported as the overall percentage of the total cation and anion concentrations.

Consistent with the preliminary results of Phase 1 of this study (Clamann et al. 2014), there is a clear shift in the ion concentrations of downstream samples from a more natural condition towards the more sulfate and chloride-rich composition of reclaimed water (Figure 20). This indicates that reclaimed water is likely mixing with the surface water. The ion composition varies between reclaimed water sources. The reclaimed water irrigated at Bartholomew Park and at Morris Williams Golf Course has a higher sulfate, chloride, and magnesium concentration then the reclaimed water irrigated at Roy Kizer. A similar variation in magnesium concentrations at the springs located on the golf courses that were irrigated with reclaimed water is also reported in a 2007 study (Hiers and Herrington 2007). The variation may be attributed to differences in the chemical composition of the wastewater stream that the two treatment plants (the Walnut Creek Wastewater Treatment Plant and the South Austin Regional Plant) are processing and distributing to the reclaimed water system.

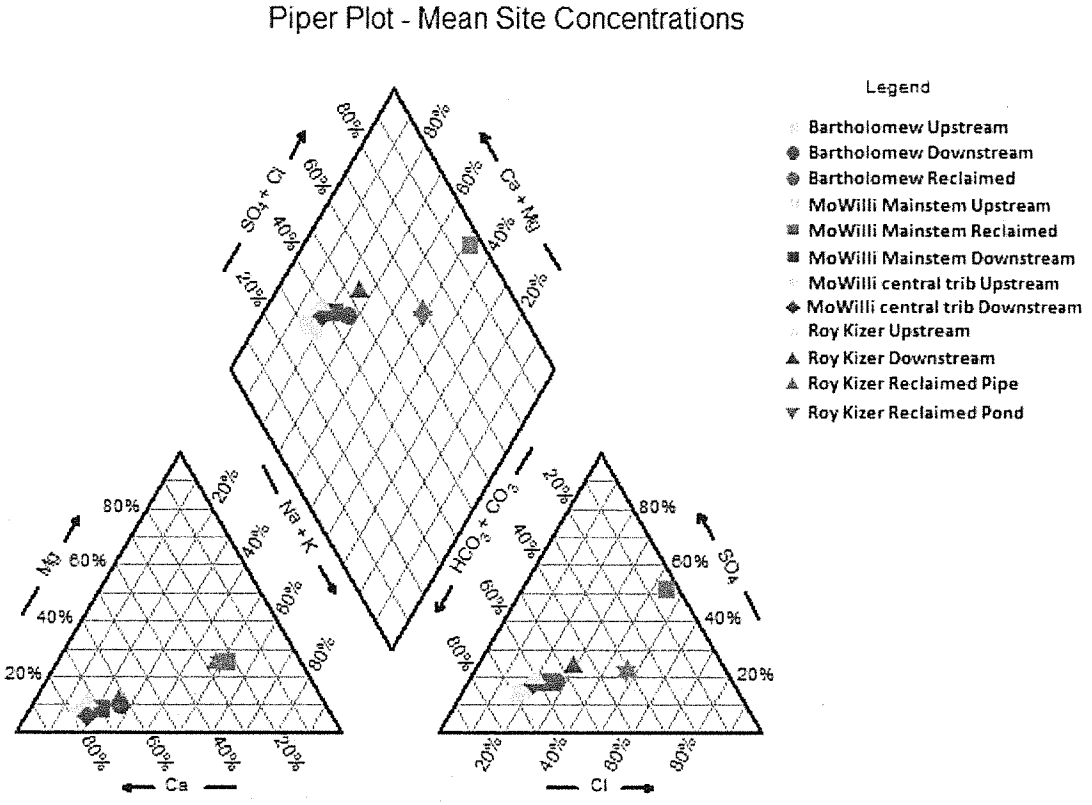


Figure 20: The mean ion concentrations for calcium, magnesium, potassium, sodium, bicarbonate, chloride and sulfate at the upstream, the downstream and the reclaim water monitoring sites.
Upstream sites are in light blue. **Downstream sites are in dark blue.** Reclaimed Water sites are in purple

Piper plots, of the pHREEQc model ion data for the upstream, the downstream, and the reclaimed water sites was constructed (Figure 21). The plots generally show the same drift in the ion data indicative of reclaimed water mixing with natural water at the downstream monitoring sites, with the exception of the

Morris Williams mainstem monitoring site. The Morris Williams mainstem site simulated ion data is different in that the ion data shows little to no variability and no significant difference in ion composition at the downstream site. This suggests that the upstream site may already be impacted by reclaimed water irrigation activities further upstream at Bartholomew Park and/or Mueller Development, which are located upstream of the Morris William Golf Course. However, it is also plausible that irrigation rates in this portion of the golf course were lower so that natural attenuation from the interaction with the soil and vegetation is sufficient to mute measureable effects in the downstream water chemistry.

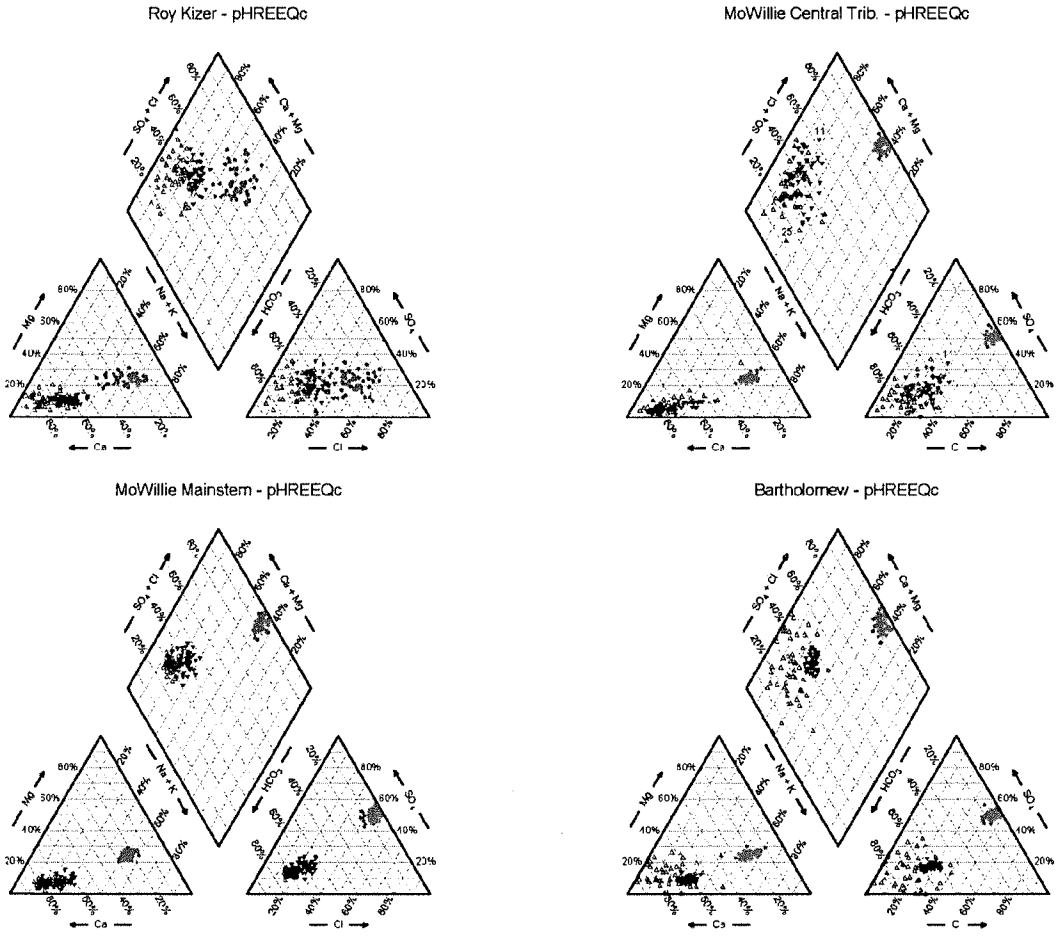


Figure 21: Piper plot of the pHREEQc model ion data for the upstream, the downstream, and the reclaimed source water at each of the study stream reaches

△ = Upstream sites ▲ = Downstream sites ● = Reclaim Water sites

Temporal Trends at Roy Kizer Spring

The Williamson Creek Wastewater Treatment Plant was closed and decommissioned in the early 1970's. Construction of the Roy Kizer Golf Course started in 1994 on the site of the old plant. Around this time the City of Austin discovered that the springs and seeps along Williamson and Onion creeks adjacent to the old treatment plant site had very high nitrate and ammonia concentrations. The δ^{15} Nitrogen isotope samples collected in August 1993 had ratios of 11.6 and 12.9, indicating a biogenic source. Using nitrogen isotope analysis, the nitrogen source was traced to sediment and sludge from the abandoned treatment plant sludge pits. To remediate this impact, during the construction of the golf course the sludge

material was stocked piled and saved for use as top dressing for the greens, tee boxes, and fairway areas so that the turf grass could utilize the nutrients within the sludge. The remediation effort was apparently successful in reducing the elevated nitrate levels observed at several springs along Williamson and Onion creeks, including Roy Kizer Spring (Figure 22). A time-series plot of nitrate+nitrite concentrations at Roy Kizer Spring from 1996 to present indicates a sharp drop in nitrate+nitrite concentration during the first four years after construction of the golf course. This reduction in nutrients were presumably due to the remediation efforts as the newly installed turf grass consumed the nitrogen from nutrient-rich sediment and sludge mixture used as top dressing. By 1998, the nutrient concentrations in spring discharge had decreased to less than 5 mg/L of nitrate+nitrite as nitrogen.

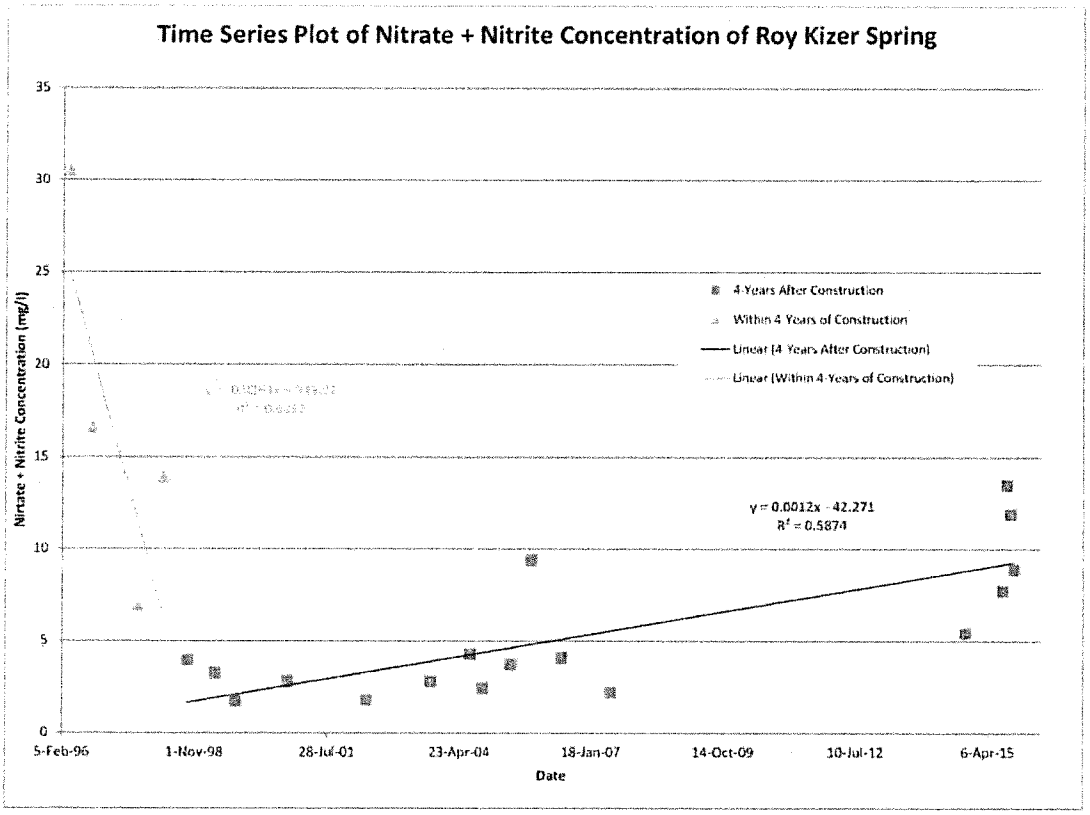


Figure 22: Time-series plot of nitrate+nitrite concentration at Roy Kizer Spring

Based on nitrate levels collected since 1998 and most recently in 2014 and 2015 associated with this study, it appears that nitrate+nitrite concentrations have recently increased to between 5 mg/L and 15 mg/L (Figure 22). Nitrogen concentrations in this range are unusually high for Austin area groundwater which typically has concentrations around 2 mg/L. Of the 2,693 nitrate+ nitrite observations collected by the City of Austin from Austin-area springs from 1968 to present, the 10 highest values were collected from springs on the Jimmy Clay and the Roy Kizer golf courses. Of interest to this study, the 10th highest nitrate+ nitrite value was collected during the recent field efforts on August 27, 2015, at Roy Kizer Spring. Since the Roy Kizer Springshed is located entirely within the golf course, the source of the biogenic influence may be the application of reclaimed water irrigation.

In addition to the spatial differences observed in the ion data between upstream and downstream sites, increases over time in sulfate and chloride concentrations may be observed at Roy Kizer Spring. The spring has occasionally been monitored by the City of Austin since the mid-1990's. Sixteen samples have been collected since August of 1996 to present (Figure 23). Piper plots indicate that the groundwater discharge from the spring is enriched with sulfate and chloride likely from reclaimed irrigation water similar to that as shown in the previously described spatial comparison between upstream and downstream sites and the pHREEQc modeled results. Since the springshed for this spring is located entirely within Roy Kizer Golf course, the source for the increase is most likely reclaimed water irrigation and grass management practices.

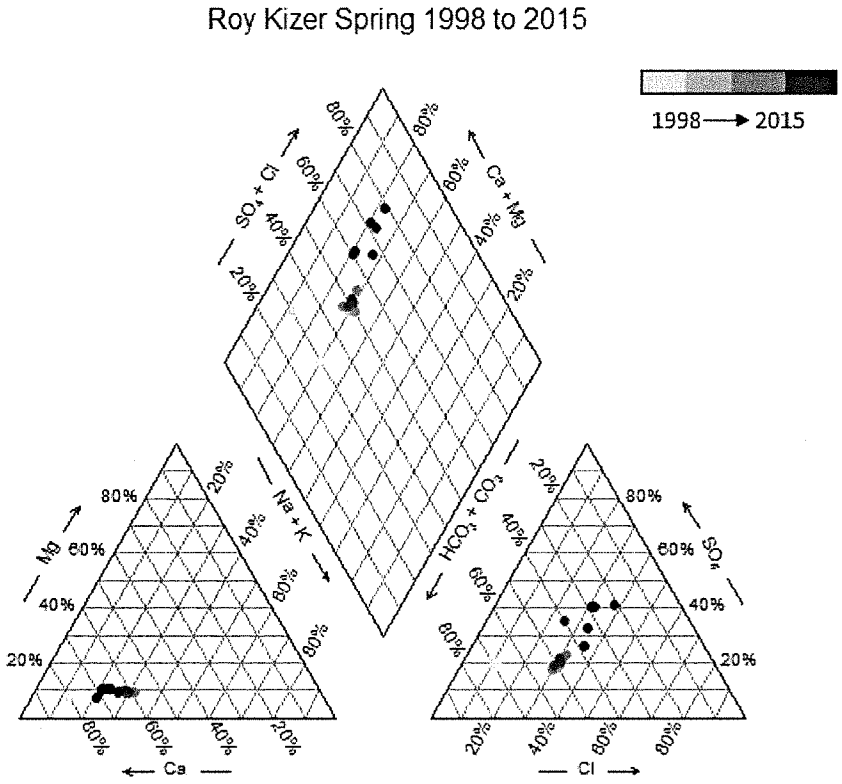


Figure 23: Piper plot of ion data collect at Roy Kizer Spring from August 1998 to December 2015. Note the temporal trend in the middle and right-hand plots that indicate a shift in the composition.

Bivariate plots of specific conductance and nitrate+nitrite nitrogen

Since 1992, the City of Austin Watershed Protection Department has been periodically monitoring selected springs adjacent to several golf courses. At least 25 springs from nine different golf courses have been monitored over the past 25 years. The golf courses include Jimmy Clay, Roy Kizer, Morris Williams, Austin Country Club, Balcones Country Club, Barton Creek Fazio, Barton Creek Crenshaw, Lost Creek and Avery Ranch. Except for Avery Ranch, which uses native surface water from Brushy Creek for irrigation, all of the golf courses use reclaimed water or a mixture of groundwater and reclaimed water for irrigation. The golf course at Great Hills uses both reclaimed water and brackish groundwater from the Trinity Aquifer.

Samples collected at Avery Ranch Spring were used as the background samples for the purposes of this assessment. The mean conductivity at Avery Ranch Spring was 770 µS/cm (95% CI = 741.0-798.3 µS/cm) (Figure 24). The mean conductivity was significantly higher at Roy Kizer Spring (mean =

1120.8 µS/cm, 95% CI = 1016.8-1224.7 µS/cm) (t-test with unequal variance, $p < 0.0001$), which is slightly inside the range of conductance of groundwater that is considered "brackish". The most recent samples collected at Roy Kizer Spring have higher than normal conductivity readings. The range of conductivity is even higher (between 1000 µS/cm to 3000 µS/cm) at the Great Hills Golf Course resulting from the combined use of reclaimed water and Trinity Aquifer water.

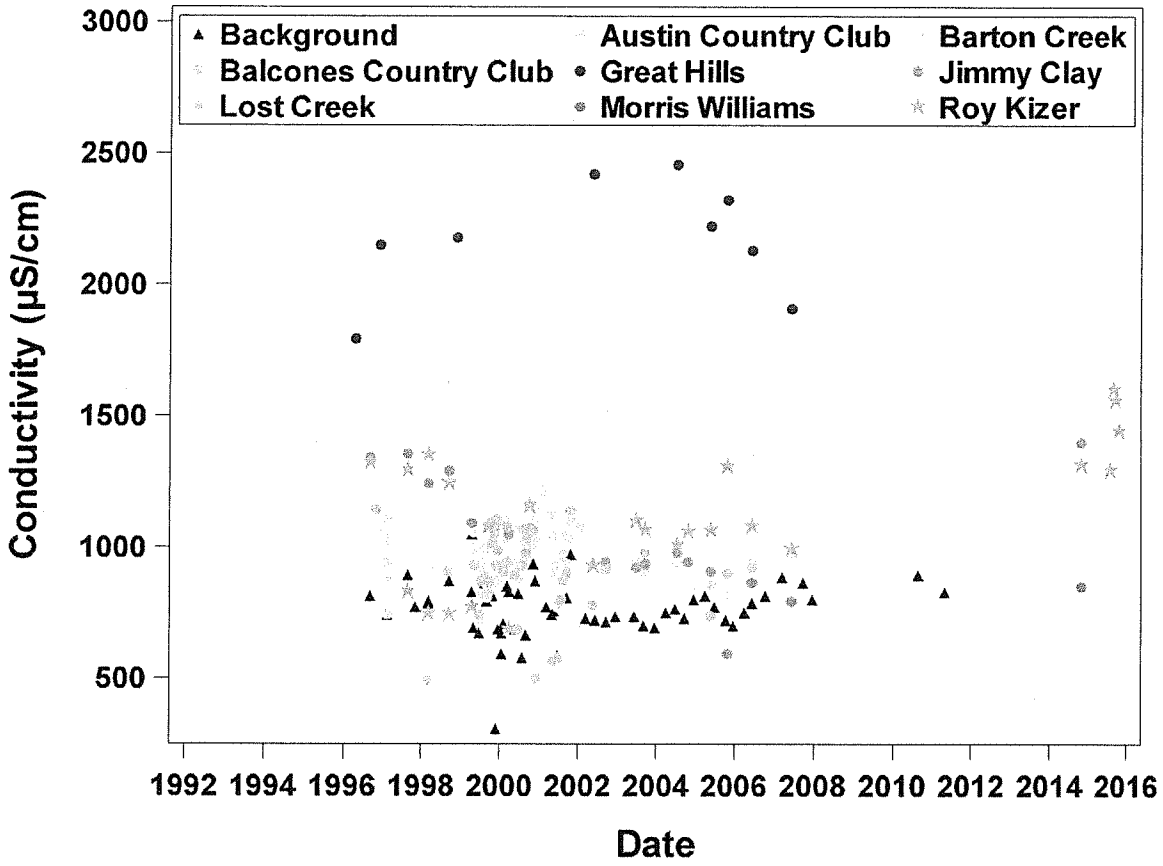


Figure 24: Conductivity at springs near Austin area golf courses (COA data). Most golf courses assessed that irrigate with reclaimed water generally have conductivity values above 770 µS/cm, the background condition for the purposes of this analysis. The high values at Great Hills results from the mixed use of reclaimed water and Trinity Aquifer groundwater.

Nitrate+nitrite nitrogen concentrations at golf course influenced springs in Austin range from 0.1 to 30 mg/L (Figure 25). Antecedent weather, irrigation rate, and spring discharge are all potential confounding factors that contribute to high variability in the data set. However, the mean nitrate+nitrite concentration at Avery Ranch Spring (background) was 2.26 mg/L (95% CI = 1.98 - 2.53 mg/L) which is significantly lower than the mean nitrate+nitrite concentration at Roy Kizer Spring (mean = 6.19 mg/L, 95% CI = 4.61 – 7.76 mg/L) (t-test with unequal variance, $p = 0.0001$). Roy Kizer Spring displays very high concentrations of nitrate in the most recent samples.

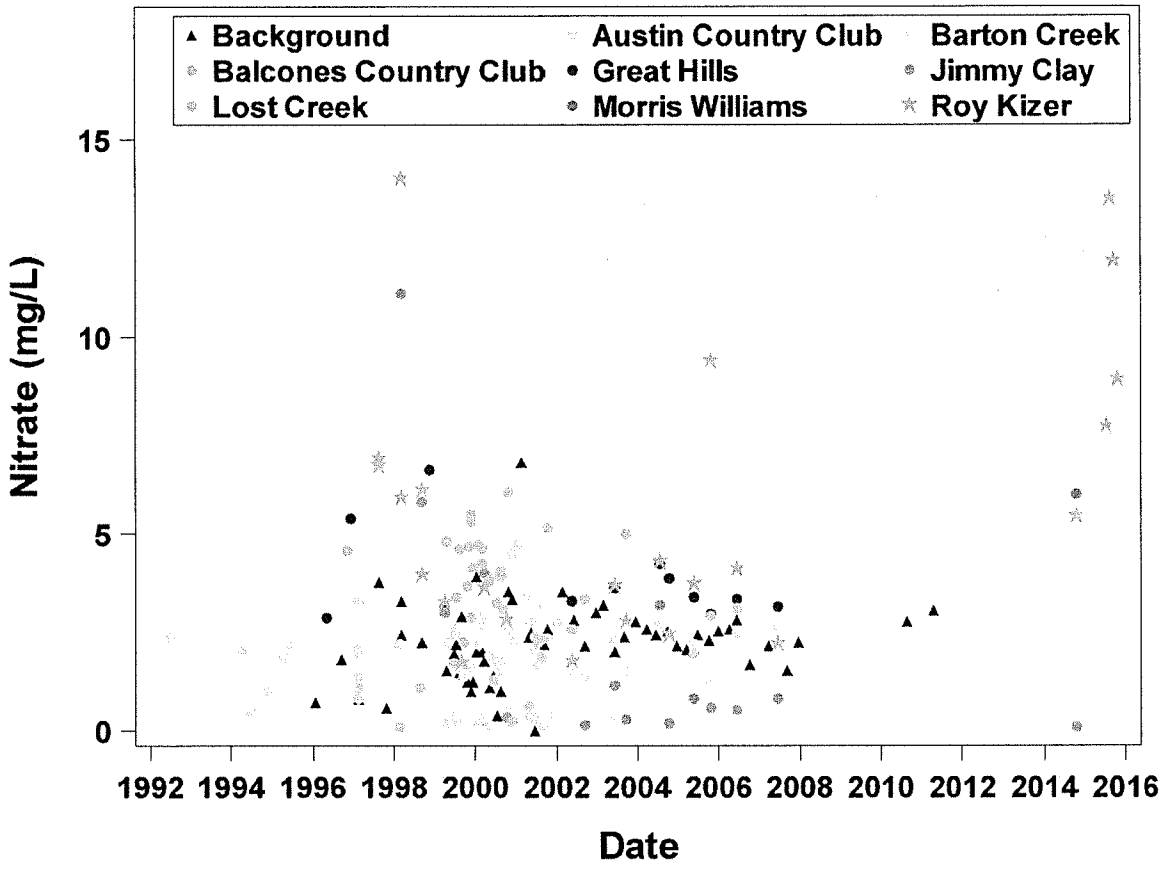


Figure 25: Nitrate+nitrite at springs near Austin area golf courses, showing that some of the highest concentrations were collected at Roy Kizer Spring during this study (2014-2015). Background concentrations for the purposes of this analysis, collected at Avery Ranch golf course (no reclaimed water irrigation), are generally below 5 mg/L.

A bivariate plot of conductivity and nitrate+nitrite nitrogen shows a positive linear relationship between increasing conductivity measurements and nitrate+nitrite nitrogen at the background golf course spring. This indicates that conductivity and nitrate+nitrite nitrogen may increase together (Figure 26). The ellipse shown in the bottom left corner of Figure 26 illustrates the zone of the 95% interval for background conductivity versus nitrate+nitrite. Data that is outside of the 95% ellipse may be considered to be different from background. There are a substantial amount of data points collected at Roy Kizer and Jimmy Clay golf courses that are outside this 95% ellipse and may be considered as different (in this case higher) than background conditions.

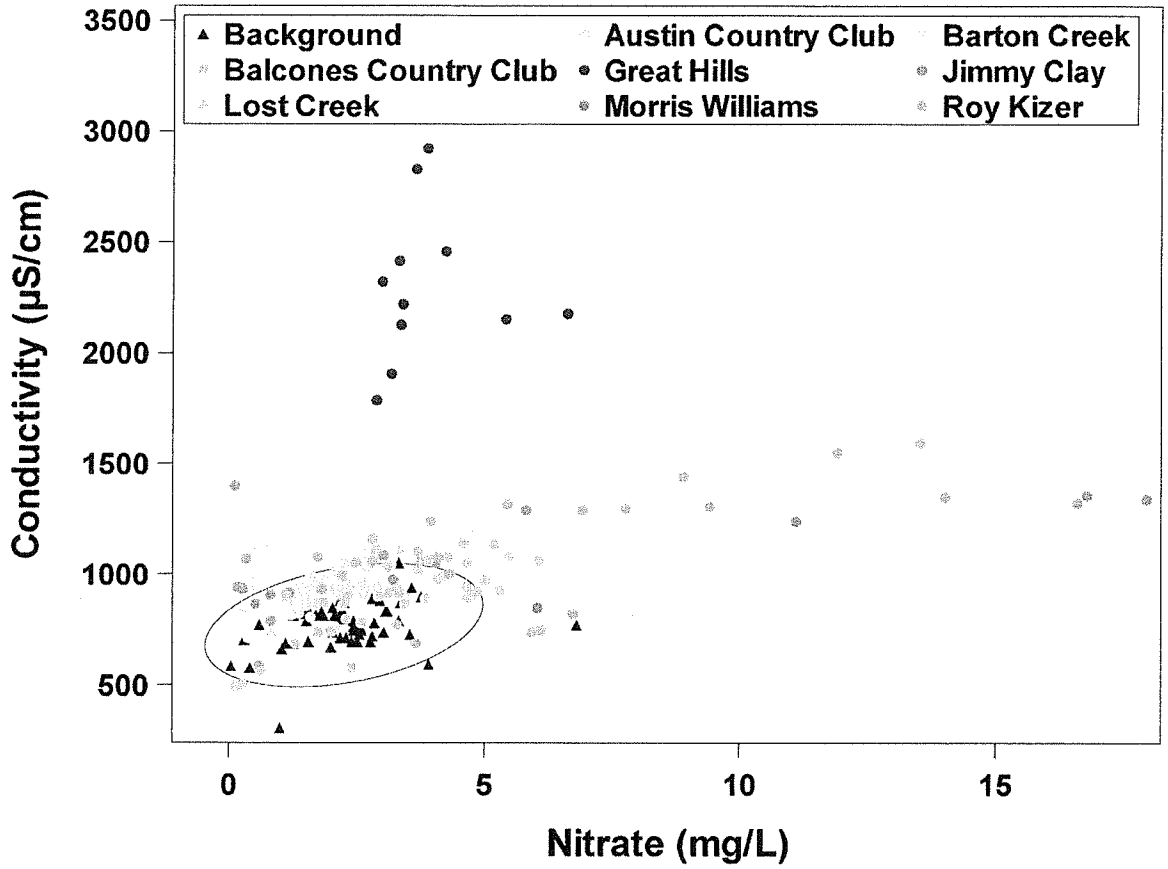


Figure 26: Conductivity versus nitrate in springs affected by golf courses. Background conditions for the purpose of this analysis are those at springs that do not include reclaimed water irrigation in the springshed, such as Avery Ranch. The ellipse shows the 95% interval for background conductivity versus nitrate. A majority of Roy Kizer, Jimmy Clay and Morris Williams values are outside the 95% background, suggesting that they are different from non-reclaim irrigated or upper gradient golf course springs.

Antecedent Rainfall

Rainfall data within the Tannehill watershed showed that all sample events were conducted under non-storm influenced conditions, although three of the four sampling events at Bartholomew Park followed fairly recently after rain events of more than 0.5 inches (Figure 27). Rainfall data within the Williamson watershed showed that the 15 October 2014 and 24 September 2015 sampling events followed rain events in which the total rainfall over the watershed was over 0.5 inches. There was little to no rain one month prior to the remaining sampling events at Clay/Kizer (Figure 28). The monthly irrigation volume at Clay/Kizer was highest for the 23 July 2015 and 27 August 2015 sampling events. Sample collection was attempted on 20 October 2015 for the Clay/Kizer sites, but Williamson Creek was not flowing at this time and no water column or benthic samples were collected.

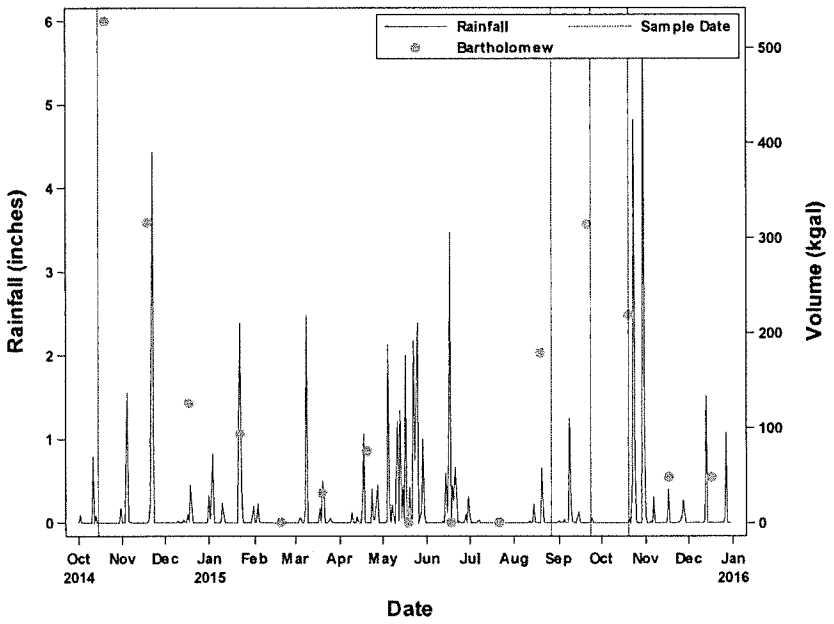


Figure 27: Rainfall (inches), Bartholomew Park irrigation volume (kgal) from October 2014 to December 2015. Dashed lines represent sampling events.

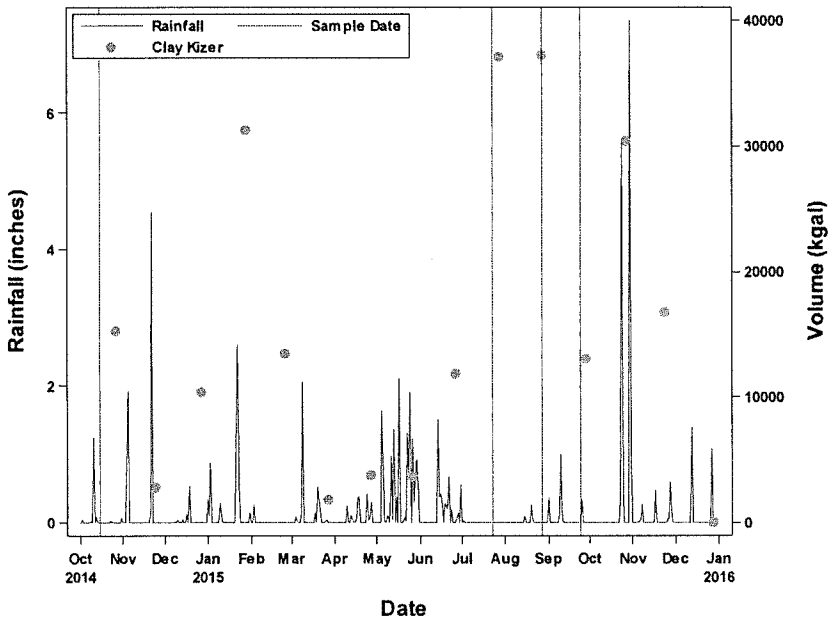


Figure 28: Rainfall (inches), Clay/Kizer irrigation volume (kgal) from October 2014 to December 2015. Dashed lines represent sampling events.

As Morris Williams Golf Course (Figure 29) also lies within the Tannehill watershed, rainfall and sampling patterns are similar to that of Bartholomew Park described previously. The monthly irrigation volume at Morris Williams was highest for the 27 August 2015 sampling event.

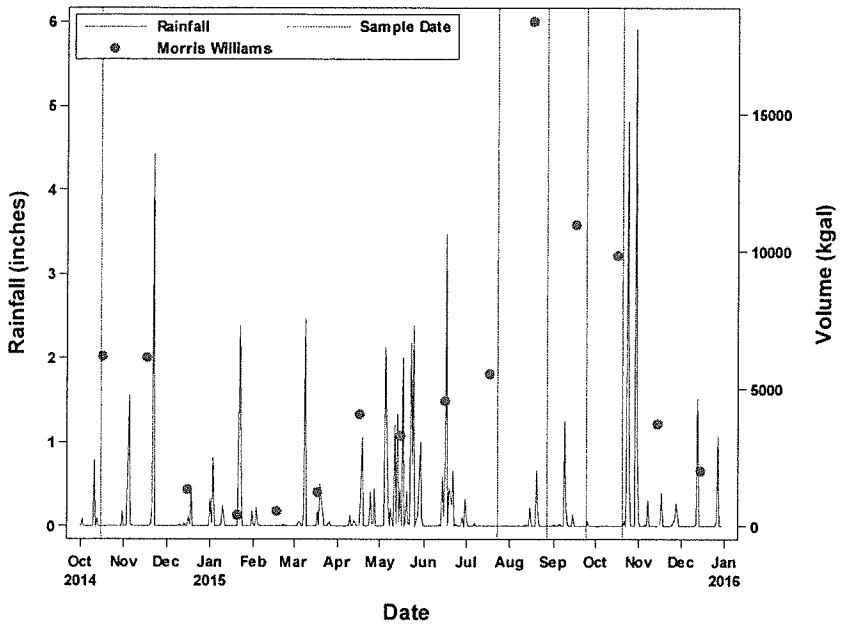


Figure 29: Rainfall (inches), Morris Williams irrigation volume (kgal) from October 2014 to December 2015. Dashed lines represent sampling events.

Nitrogen Isotopes

Lab analysis of the stable δ^{15}nitrogen and δ^{18} oxygen isotope ratios of nitrate collected during the October 25, 2014, sampling event revealed that all sites with sufficient nitrate for isotope analysis plotted in the biogenic range using common source fields by Kendall (1988). This suggests that the source of nitrogen was manure or wastewater (Figure 34). Similar isotopic comparisons have been used to identify potential wastewater effluent impacts to Austin area waterbodies by the United States Geological Survey (Mahler et al. 2011). There was no indication that the nitrogen in the study water bodies was originating from precipitation or fertilizer application. Both upstream and downstream sites on Waller Creek plotted in the biogenic range, possibly indicating leaking wastewater infrastructure upstream of the Hancock Golf Course.

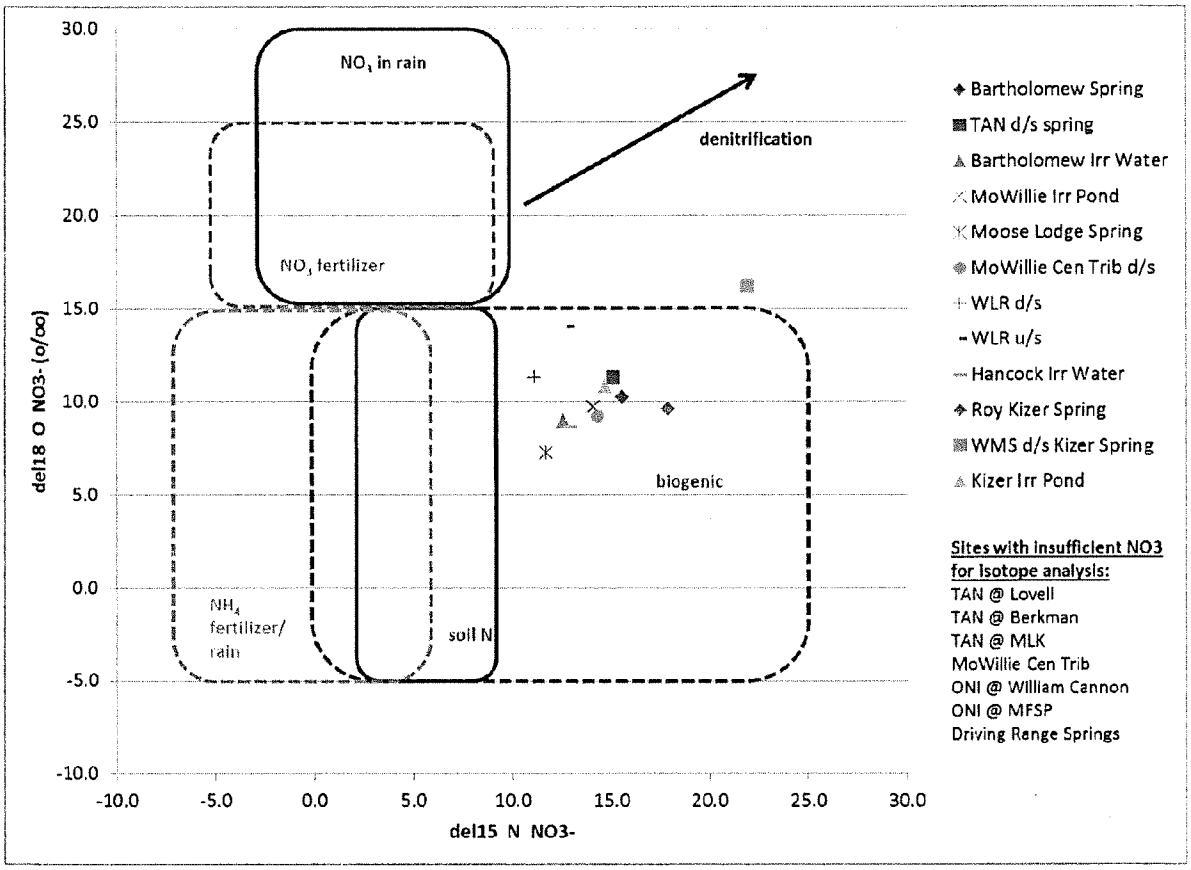


Figure 34: Nitrogen/Oxygen stable isotope ratio plot for study sites. Source boundaries adapted from Kendall (1998).

Conclusions

Using the conservation of mass, a conceptual model was established to determine whether there was a discernible impact from reclaimed water on adjacent surface water and groundwater resources. This model generated three hypotheses (see Methods section), which were tested against statistical intervals of data collected at each of three City of Austin facilities irrigating with reclaimed water. Furthermore, this conceptual model allowed for a more precise model, pHREEQc, which incorporated the interaction of geochemical processes into the model. The pHREEQc model provided predictions on the composition of downstream water given a certain mixture of upstream water and reclaimed water. This information was also used to verify the validity of the conceptual model and as an indication of the appropriateness of the hypothesis chosen. Finally, additional data was provided supporting the model and the conclusions presented below:

- Confidence intervals in surface water indicate that nitrate+nitrite and ions including sulfate, alkalinity, chloride, sodium, magnesium, potassium, and calcium are significantly higher in the downstream surface water samples at 2 of the 4 sites, Bartholomew and Roy Kizer (Figure 5, 9, and 11), but not significantly higher at Morris Williams mainstem and ambiguous for Morris Williams central tributary. Information from benthic nutrient ratios (discussed below) at Morris Williams central tributary removed this ambiguity.

- The benthic C:P confidence intervals exhibited a significant decrease from upstream to downstream sites indicating degradation downstream of reclaim water irrigation areas. While there was no significant difference in benthic C:N ratios from upstream to downstream, the probability of the benthic C:N ratios to be lower at downstream sites was high (0.89) and more samples would be necessary to validate indicate a significant decrease from upstream to downstream. In addition, benthic C:P and C:N ratios from only 2 of the 13 paired (upstream/downstream) samples were higher downstream than upstream (Figures 31 and 32). There was no significant difference in benthic chlorophyll *a* (mass per unit area) from upstream to downstream even though the nutrients for growth were more readily available to algae downstream of the irrigation. Thus, there was not a significant increase in biomass upstream to downstream observed in this study although confounding factors such as available sunlight (i.e., accounting for variable canopy cover at the study sites) were not evaluated in this analysis.

- The difference in benthic C:P and C:N ratios were most prominent in the mainstem of Tannehill Creek upstream and downstream of Morris Williams Golf Course. The differences in water column nutrients between the upstream and downstream locations at Morris Williams were the most ambiguous with this being the only paired location where there was not more nitrate+nitrite downstream of the irrigation.

- Piper plots of chemical facies indicate downstream waters generally trend from the upstream conditions toward the reclaimed water conditions indicating an influence of the reclaimed water on surface water resources (Figures 20, 21, and 23).

- The computer model, pHREEQc, estimated that about 40% of the downstream water at Bartholomew Park was from reclaimed water, validating the results from the confidence intervals at Bartholomew Park. The variability in the data at Roy Kizer could not reproduce a similarly precise estimate from pHREEQc of the reclaimed water contribution on the downstream section. Estimates of reclaimed water contribution on downstream sections of Morris Williams did not indicate an impact on the surface water, but benthic ratios show a clear uptake of the nutrients into the algal biomass.

- Samples from springs at the golf course study sites where reclaimed water is irrigated generally show higher conductivity than background conditions (Figures 24 and 26), consistent with previous local evaluations (Hiers and Herrington 2007). More specifically, conductivity collected at the spring adjacent to Roy Kizer is significantly higher than background conditions.

- Nitrate+nitrite concentrations at the spring impacted by Roy Kizer Golf Course are significantly higher than background concentrations, consistent with previous local evaluations (Hiers and Herrington 2007) and other U.S. Geological Survey studies (Pruitt et al. 1988, Katz et al. 2009). In fact, some of the highest nitrate+nitrite concentrations ever observed by the City of Austin in springs were collected at the Roy Kizer Golf Course. Of the 2,693 nitrate+nitrite samples collected from springs, the 10 highest values are all from Jimmy Clay and Roy Kizer, one of which was recently collected at Roy Kizer (Figures 22 and 25).

- Nitrogen and oxygen isotopes of nitrate for all sites with sufficient nitrate for analysis indicated that nitrogen is originating from biogenic (manure or wastewater) sources (Figure 34) during the October 2014 sampling event. Nitrogen in Waller Creek upstream of Hancock Golf Course also yielded a biogenic signature.

Based on these findings, the hypothesis that there is an impact (Hypothesis 2) to the receiving stream either on the surface water or the benthic algal stoichiometry that is likely attributable to the irrigation of reclaimed water is validated. Irrigation of reclaimed water appears to be inadvertently degrading the quality of adjacent surface water and groundwater resources based on the weight of evidence evaluated in this study.

Recommendations

1. Reclaimed water irrigation should not occur adjacent to waterways to avoid unintended adverse water quality impacts. A protective setback distance to avoid adverse impacts has not yet been quantitatively determined by the City of Austin Watershed Protection Department. The Critical Water Quality Zone (City of Austin Land Development Code Chapter 25-8-92), Erosion Hazard Zone (City of Austin Land Development Code Chapter 27-7-2, Drainage Criteria Manual Appendix E) and/or the City of Austin fully-developed floodplain boundaries should be considered as protective buffers in which no reclaimed water irrigation should occur, consistent with existing City of Austin policies and land development regulations to limit anthropogenic disturbance in these areas.

2. If irrigation of reclaimed water cannot be adjusted on a specific site so that it does not occur within the Critical Water Quality Zone and/or City of Austin fully-developed floodplain (e.g., potentially due to the width of these zones relative to the total size of a specific parcel), then site-specific characteristics (e.g., soils, geology, topography, vegetation) should be evaluated on a case-by-case basis to determine appropriate protective setbacks.

3. If it is determined that current irrigation of reclaimed water on public parks adjacent to waterways is unavoidable, then measures should be implemented over time to minimize adverse impacts to surface water. Mitigation measures may include, but are not limited to, revised riparian vegetation management practices that maximize nutrient uptake, sprinkler head adjustments, and additional monitoring to identify potential adjustments to irrigation rates or schedule while meeting turf grass needs. That additional monitoring could also improve the statistical intervals developed in this report.

4. Additional sampling as described in the Methods section of this report is recommended to increase the resolution of benthic C:N ratios upstream and downstream of irrigation sites to more conclusively determine if impacts are present for this parameter.

5. Benthic chlorophyll *a* concentrations (mass per unit area) were too variable to discern an upstream to downstream statistical pattern. Additional explanatory variables like canopy cover need to be accounted for when using benthic chlorophyll *a* as a measure of degradation in similar scenarios.

Discussion

Reclaimed water is a priority demand-side water conservation strategy for the City of Austin, as recognized in the Austin Water Resource Planning Task Force Report to City Council (July 2014, austintexas.gov/page/austin-water-resource-planning-task-force). Reclaimed water use not only reduces the discharge of treated effluent to the Colorado River, but also reduces the withdrawal of high quality raw water from Lake Austin and Lake Travis. The Austin Water Utility has 74 active metered reclaimed water customers, four bulk fill stations, and more than 50 miles of reclaimed water distribution pipelines already installed. Reuse of City of Austin reclaimed water constitutes approximately 3% of total wastewater volume treated. For site plan applications submitted on or after May 1, 2015, the City of Austin mandates connection of new commercial development to the reclaimed water distribution system

if the development is within 250 ft of a reclaimed water main. Thus, applying restrictions on current or future reclaimed water irrigation should be carefully considered.

This report proposes restrictions on reclaimed water irrigation within the floodplain, CWQZ or EHZ (see Recommendations). Planning staff within the City of Austin Watershed Protection Department conducted four geographic information system (GIS) analyses of the potential implications of the Recommendations of this report on existing, planned, and new potential reclaimed water customers. These analyses utilized Travis County Appraisal District (TCAD) parcel boundaries within the actual Austin Water Utility water service area (water pressure zone). Parcel boundaries were intersected with City of Austin fully-developed floodplain (floodplain), Critical Water Quality Zone (CWQZ) and Erosion Hazard Zone (EHZ) boundaries.

Scenario 1, all parcels within Austin Water Utility actual water service area

This scenario assessed the percent area of 207,433 individual TCAD parcels in the actual Austin Water water service area within the floodplain, CWQZ and EHZ on an individual parcel basis. Of the 207,433 parcels assessed, there were 175,501 parcels (84.6% of total) with no area either within the floodplain, CWQZ, or EHZ. Approximately 99.19% of parcels have less than 3% of the area within the parcel boundaries falling within the floodplain, CWQZ or EHZ. Less than 0.02% of parcels are estimated to have 75% or more of the total parcel area falling within the floodplain, CWQZ or EHZ. Thus, on a citywide basis the restrictions on reclaimed water irrigation proposed in the Recommendations section of this report would have a minimal impact future reclaimed water use (Table 5).

Table 5. Analysis of the most restrictive (maximum) impact of limitation on reclaimed water irrigation on all parcels within the Austin Water Utility actual water service area.

Maximum Percent of Parcel Affected (Bin)	# of Parcels within the Bin	% of Total Number of Parcels within the Bin
0	175,501	84.61
less than 1%	28,500	13.74
1%-2%	1,205	0.58
2%-3%	539	0.26
3-4%	377	0.18
4-5%	243	0.12
5-6%	170	0.08
6-7%	128	0.06
7-8%	89	0.04
8-9%	96	0.05
9-10%	73	0.04
10-25%	343	0.17
25-50%	100	0.05
50-75%	26	0.01
75-100%	43	0.02

Scenario 2, potential new reclaimed water customer impact

This scenario assessed the potential impact of the restrictions on reclaimed water irrigation proposed in the Recommendations section of this report on potential new reclaimed water customers as identified by Austin Water in February 2015. The maximum pervious area of the 31 TCAD parcels within the floodplain, CWQZ or EHZ was assessed. Two of the 31 potential new customer parcels had no pervious

area (as defined by City of Austin Environmental Criteria Manual) within the parcel boundaries. The majority (96.7%) of identified potential new customers had less than 2% of their pervious areas falling within the floodplain, CWQZ or EHZ. The maximum impact was 5.4% of the pervious area, occurring on one parcel (Table 6).

Table 6. Analysis of most restrictive (maximum) impact of limitation on reclaimed water irrigation on the pervious area of parcels identified as potential new reclaimed water customers (as of February 2015).

Maximum Percent of Pervious Area Within Parcel Affected (Bin)	# of Parcels within Bin	% of Total # of Parcels
No Pervious Area	2	6.45
No impact	18	58.06
Less than 1%	8	25.81
1-2%	2	6.45
5-6%	1	3.23

Scenario 3, potential impact to existing reclaimed water customers

This scenario intersected TCAD parcel boundaries for 45 existing Austin Water reclaimed water customers (as identified in February 2015) with the floodplain, CWQZ and EHZ boundaries. The majority of existing reclaimed water customer parcels (64.4%) had no pervious area within the floodplain, CWQZ or EHZ. Only 11.1% of existing customer parcels had 50% of their total pervious area within the floodplain, CWQZ or EHZ.

Table 7. Analysis of most restrictive (maximum) impact of limitation on reclaimed water irrigation on the pervious area of parcels for existing reclaimed water customers (as of February 2015).

Maximum Percent of Pervious Area with Parcel Affected (Bin)	# of Parcels within Bin	% of Total # of Parcels
No impact	29	64.44
Less than 10%	2	4.44
10-20%	4	8.89
20-30%	1	2.22
30-40%	2	4.44
40-50%	2	4.44
50-60%	1	2.22
60-70%	0	0.00
70-80%	2	4.44
80-90%	0	0.00
90-100%	2	4.44

Scenario 4, parcels within 100 ft of a current or proposed reclaimed water main

This scenario identified parcels within the Austin Water actual water service area located within 100 ft of a current or proposed reclaimed water distribution main. The pervious (irrigable) area for these 6,940 parcels also falling within the floodplain, CWQZ or EHZ was assessed. The majority of parcels (81%) within 100 ft of an existing or reclaimed water distribution main had all of their pervious area falling within the floodplain, CWQZ or EHZ. Approximately 6.2% of parcels had no pervious area outside of the floodplain, CWQZ or EHZ. Approximately 10.6% of parcels within 100 ft of an existing or planned

reclaimed water distribution main would not be able to irrigate reclaimed water on 50% or more of their pervious area as a result of restrictions proposed in the Recommendations section (Table 8).

Table 8. Analysis of most restrictive (maximum) impact of limitation on reclaimed water irrigation on the pervious area of parcels within 100 ft of an existing or planned reclaimed water distribution main.

Maximum % of Pervious Area within Parcel Affected (Bin)	# of Parcels within Bin	% of Total # of Parcels
0%	5624	81.04
less than 1%	48	0.69
1-10%	129	1.86
10-20%	118	1.70
20-30%	104	1.50
30-40%	97	1.40
40-50%	80	1.15
50-60%	80	1.15
60-70%	74	1.07
70-80%	78	1.12
80-90%	73	1.05
90-100%	435	6.27

Acknowledgements

This initial sampling event was completed with the assistance of multiple City of Austin Parks and Recreation Department staff that facilitated access to the park and golf course study locations. Additionally, Dan Pedersen with Austin Water provided background information on the use of reclaimed water at these locations, and provided reclaimed water sampling information. The City of Austin Watershed Protection Department expresses sincere appreciation to these individuals for their valuable assistance with this project.

References

Biggs, BJF. 1985. Algae: a blooming nuisance in rivers. Soil and Water, **21**: pp 27–31.

Biggs, BJF, and GM Price. 1987. A survey of filamentous algal proliferations in New Zealand rivers. New Zealand Journal of Marine Freshwater Research, **21**: pp 175–191.

Biggs, BJF, and HA Thomsen. 1995. Disturbance in stream periphyton by perturbations in shear stress: time to structural failure and differences in community resistance. Journal of Phycology, **31**: pp. 233–241.

Bowman, MF, PA Chambers, and DW Schindler. 2005. Changes in stoichiometric constraints on epilithon and benthic macroinvertebrates in response to slight nutrient enrichment of mountain rivers. Freshwater Biology, **50**(11): pp. 1836-1852.

City of Austin (COA). 2005. Preliminary Report on Storm Water Runoff from Effluent-Irrigated Golf Courses. CM-05-04. Prepared by the Environmental Resource Management Division, City of Austin Watershed Protection Department.

Clamann, A, and S Hiers, A Richter, M Scoggins, C Herrington. 2014. Reclaimed water irrigation water quality impact assessment, Phase 1 Summary of Results. City of Austin Watershed Protection Department. DR-15-03. 17 p.

Droop, MR. 1974. The nutrient status of algal cells in continuous culture. Journal of the Marine Biological Association of the United Kingdom, **54**(4): pp. 825-855.

Frost, PC, and JJ Elser. 2002. Effects of light and nutrients on the net accumulation and elemental composition of epilithon in boreal lakes. Freshwater Biology, **47**: pp. 173–183.

Gelman, A, and J Hill. 2007. Data Analysis Using Regression and Multilevel/Hierarchical Models. Cambridge University Press. New York, NY.

Hiers, S, and C Herrington, 2007. Differences in groundwater quality at springs influenced by effluent irrigation of golf courses in Austin, Texas, City of Austin – Watershed Protection Department, SR-07-12, 14 p.

Hillebrand, H, and M Kahlert. 2001. Effect of grazing and nutrient supply on periphyton biomass and nutrient stoichiometry in habitats of different productivity. Limnology and Oceanography, **46**: pp. 1881–1898.

Hillebrand, H, and M Kahlert. 2002. Effect of grazing and water column nutrient supply on biomass and nutrient content of sediment microalgae. Aquatic Botany, **72**: pp. 143–159.

Katz, BG, and DW Griffin, HD Davis. 2009. Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: Chemical and microbiological indicators. Science of the Total Environment 407: 2872-2886.

Kendall, C. 1998. Tracing nitrogen sources and cycling in catchments. *IN* Isotope Tracers in Catchment Hydrology. Edited by C. Kendall and J.J. McDonnell. Elsevier Science B.V., Amsterdam.

Mahler, BJ, and M. Musgrove, C Herrington, TL Sample. 2011. Recent (2008–10) concentrations and isotopic compositions of nitrate and concentrations of wastewater compounds in the Barton Springs zone, south-central Texas, and their potential relation to urban development in the contributing zone: U.S. Geological Survey Scientific Investigations Report 2011–5018, 39 p.

Peterson, CG, and RJ Stevenson. 1989. Substratum conditioning and diatom colonization in different current regimes. Journal of Phycology, **25**: pp. 790–793.
1990. Post-

Pollick, HF. 2004. Water fluoridation and the environment: current perspective in the United States. International journal of occupational and environmental health 10(3): 343-350.

Pruitt, JB, and JF Elder, IK Johnson. 1988. Effects of treated municipal effluent irrigation on ground water beneath sprayfields, Tallahassee, Florida. U.S. Geological Survey Water-Resources Investigations Report 88-4092. 35 pp.

Quinn, JM, and BW Gilliland. 1989. The Manawatu River cleanup—has it worked? Transactions of the Institution of Professional Engineers, New Zealand, **16**: pp 22–26.

Quinn, JM, and CW Hickey. 1990. Magnitude of effects of substrate particle size, recent flooding and catchment development on benthic invertebrate communities in 88 New Zealand rivers. New Zealand Journal of Marine and Freshwater Research, **24**: pp 411–427.

Rhee, G. 1973. A continuous culture study of phosphate uptake, growth rate and polyphosphate in *Scenedesmus* sp. Journal of Phycology, **9**(4): pp. 495-506.

Stelzer, RS, and GA Lamberti. 2001. Effects of N:P ratio and total nutrient concentration on stream periphyton community structure, biomass, and elemental composition. Limnology and Oceanography, **46**: pp. 356–367.

Stevenson, RJ. 1983. Effects of current and conditions simulating autogenically changing microhabitats on benthic diatom immigration. Ecology, **64**: pp. 1514–1524.

Texas Commission on Environmental Quality (TCEQ). 2006. Nutrient criteria development plan: Texas Commission on Environmental Quality, draft report to U.S. Environmental Protection Agency, pp 33.

Welch, EB, JM Jacoby, RR Horner, and MR Seeley. 1988. Nuisance biomass levels of periphyton algae in streams. Hydrobiologia, **157**: pp 161–168.

Wharfe, JR, KS Taylor, and HAC Montgomery. 1984. The growth of *Cladophora glomerata* in a river receiving sewage effluent. Water Research, **18**: pp 971–979.

WRE SOP. 2013. City of Austin Water Resource Evaluation Section Standard Operating Procedures Manual. Section 5.4 Diatom Sampling.

Appendix A Paired Differences

Table A.1: Confidence Intervals of the Mean Paired Differences in Concentrations (mg/L, unless otherwise noted) between Downstream and Upstream Samples in Bartholomew Park

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
DISSOLVED OXYGEN	-5.6	-1.6	2.0
pH (standard units)	-0.35	-0.10	0.15
Ammonia	-0.14	0.02	0.18
Nitrate	1.04	1.76	2.45
TKN	-0.19	0.11	0.39
Total Nitrogen	1.20	1.84	2.48
Orthophosphorus	-0.032	0.009	0.046
Phosphorus	-0.023	0.023	0.069
Alkalinity	96.2	106.9	117.8
Chloride	16.5	41.0	63.5
Sodium	12.9	29.9	45.7
Magnesium	3.0	5.0	6.8
Calcium	32.4	55.0	74.2
Potassium	0.3	1.2	2.1
Sulfate	5.8	30.5	57.5
Fluoride	-0.04	0.00	0.04
Strontium	0.09	0.19	0.27

Table A.2: Confidence Intervals of the Mean Paired Differences in Concentrations (mg/L, unless otherwise noted) between Downstream and Upstream Samples in Morris Williams (main stem)

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
DISSOLVED OXYGEN	-4.9	-1.4	1.9
pH (standard units)	-0.34	-0.13	0.09
Ammonia	-0.06	0.08	0.25
Nitrate	-1.02	-0.39	0.27
TKN	0.11	0.39	0.66
Total Nitrogen	0.32	0.95	1.58
Orthophosphorus	-0.028	0.010	0.043
Phosphorus	-0.017	0.025	0.067
Alkalinity	-68.7	-59.0	-49.3
Chloride	-9.0	11.1	33.8
Sodium	-7.3	7.0	22.7
Magnesium	-1.5	0.2	1.9
Calcium	-43.8	-26.3	-5.3
Potassium	-0.2	0.6	1.4
Sulfate	-14.4	11.5	36.3
Fluoride	-0.05	-0.01	0.03
Strontium	-0.16	-0.09	-0.01

Table A.3: Confidence Intervals of the Mean Paired Differences in Concentrations (mg/L, unless otherwise noted) between Downstream and Upstream Samples in Morris Williams (central tributary)

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
DISSOLVED OXYGEN	-2.0	1.6	5.1
pH (standard units)	0.47	0.67	0.86
Ammonia	-0.19	-0.02	0.12
Nitrate	0.16	0.79	1.45
TKN	-0.21	0.07	0.34
Total Nitrogen	-0.50	0.80	2.10
Orthophosphorus	-0.008	0.026	0.069
Phosphorus	-0.004	0.035	0.084
Alkalinity	1.6	11.2	21.0
Chloride	-1.6	18.6	39.2
Sodium	-3.9	10.2	25.1
Magnesium	-1.4	0.2	2.0
Calcium	-1.3	17.0	35.0
Potassium	-1.0	-0.2	0.7
Sulfate	0.7	24.2	47.1
Fluoride	-0.02	0.02	0.05
Strontium	-0.02	0.05	0.13

Table A.4: Confidence Intervals of the Mean Paired Differences in Concentrations (mg/L, unless otherwise noted) between Downstream and Upstream Samples in Roy Kizer

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
DISSOLVED OXYGEN	-4.8	-1.3	2.1
pH (standard units)	-0.64	-0.43	-0.20
Ammonia	-0.17	0.01	0.18
Nitrate	2.33	3.20	4.00
TKN	0.00	0.31	0.65
Total Nitrogen	-0.78	3.62	8.02
Orthophosphorus	-0.044	0.005	0.043
Phosphorus	-0.053	0.011	0.056
Alkalinity	28.0	40.0	52.2
Chloride	18.5	48.9	74.4
Sodium	15.9	37.2	55.3
Magnesium	3.3	5.6	7.7
Calcium	11.6	36.3	58.8
Potassium	2.7	3.9	5.0
Sulfate	11.0	40.0	72.6
Fluoride	-0.01	0.03	0.08
Strontium	-0.09	0.00	0.10

Appendix B Confidence Intervals of the Mean

Table B.1: Confidence Intervals of the Mean in Concentrations (mg/L) at Bartholomew Park

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
Upstream			
Orthophosphorus	<DL	<DL	<DL
Phosphorus	<DL	0.02	0.14
Nitrate	<DL	0.09	3.56
TKN	0.056	0.53	0.99
Alkalinity	69.64	102.4	134.6
Chloride	<DL	16.02	34.64
Sodium	<DL	12.56	27.11
Magnesium	<DL	3.56	7.99
Calcium	25.50	44.46	63.56
Potassium	1.50	2.426	3.36
Sulfate	<DL	16.44	33.28
Fluoride	0.14	0.37	0.59
Downstream			
Orthophosphorus	<DL	.01	.02
Phosphorus	<DL	0.04	0.26
Nitrate	<DL	1.32	3.65
TKN	0.15	0.51	0.87
Alkalinity	195.4	224.9	251.7
Chloride	52.70	63.11	73.18
Sodium	38.29	48.29	58.09
Magnesium	6.05	8.98	11.86
Calcium	86.22	101.00	115.00
Potassium	3.38	3.95	4.51
Sulfate	46.42	56.18	65.61
Fluoride	0.21	0.36	0.52
Reclaimed Water			
Orthophosphorus	4.22	4.56	4.90
Phosphorus	4.53	4.69	4.84
Nitrate	25.6	28.6	31.5
TKN	0.3	0.7	1.2
Alkalinity	<DL	27.7	62.2
Chloride	107.5	120.5	132.7
Sodium	114.9	127.6	139.4
Magnesium	30.5	34.1	37.6
Calcium	32.8	50.4	67.9
Potassium	14.1	14.8	15.5
Sulfate	173.0	185.1	196.4
Fluoride	1.9	2.1	2.3

Table B.2: Confidence Intervals of the Mean in Concentrations (mg/L) at Morris Williams (main stem)

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
Upstream			
Orthophosphorus	<DL	<DL	<DL
Phosphorus	<DL	<DL	0.03
Nitrate	<DL	0.71	2.87
TKN	<DL	0.26	0.62
Alkalinity	217.8	245.6	271.1
Chloride	25.59	34.99	44.56
Sodium	16.09	25.22	34.52
Magnesium	3.11	5.80	8.51
Calcium	97.00	110.70	123.50
Potassium	1.30	1.83	2.36
Sulfate	29.08	38.15	46.98
Fluoride	0.21	0.34	0.48
Downstream			
Orthophosphorus	<DL	0.01	0.03
Phosphorus	<DL	0.05	0.17
Nitrate	<DL	0.34	2.75
TKN	0.251	0.60	0.96
Alkalinity	138.40	161.80	184.10
Chloride	25.22	38.41	51.37
Sodium	16.71	27.10	37.42
Magnesium	2.35	5.40	8.50
Calcium	61.38	75.18	88.54
Potassium	1.742	2.392	3.055
Sulfate	26.26	38.19	50.01
Fluoride	0.15	0.31	0.47
Reclaimed Water			
Orthophosphorus	4.22	4.56	4.90
Phosphorus	4.53	4.69	4.84
Nitrate	25.6	28.6	31.5
TKN	0.3	0.7	1.2
Alkalinity	<DL	27.6	55.8
Chloride	107.5	120.5	132.7
Sodium	114.9	127.6	139.4
Magnesium	30.5	34.1	37.6
Calcium	32.8	50.4	67.9
Potassium	14.1	14.8	15.5
Sulfate	173.0	185.1	196.4
Fluoride	1.9	2.1	2.3

Table B.3: Confidence Intervals of the Mean in Concentrations (mg/L) at Morris Williams (central tributary)

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
Upstream			
Orthophosphorus	<DL	<DL	<DL
Phosphorus	<DL	0.02	0.04
Nitrate	4.55	5.73	6.95
TKN	7.16	7.32	7.48
Alkalinity	<DL	1.07	2.31
Chloride	0.17	0.30	0.44
Sodium	129	216	291
Magnesium	6.13	30.44	52.21
Calcium	11.05	25.31	38.80
Potassium	2.68	4.98	7.27
Sulfate	38.29	96.77	145.30
Fluoride	1.50	2.45	3.39
Downstream			
Orthophosphorus	<DL	0.05	0.15
Phosphorus	<DL	0.07	0.19
Nitrate	0.53	1.76	3.00
TKN	0.19	0.32	0.45
Alkalinity	135	223	297
Chloride	18.82	43.03	65.90
Sodium	17.57	32.22	46.09
Magnesium	2.83	5.08	7.34
Calcium	49.63	111.10	160.70
Potassium	1.34	2.28	3.19
Sulfate	16.99	48.96	79.44
Fluoride	0.34	0.39	0.45
Reclaimed Water			
Orthophosphorus	4.22	4.56	4.90
Phosphorus	4.53	4.69	4.84
Nitrate	25.6	28.6	31.5
TKN	0.3	0.7	1.2
Alkalinity	<DL	27.6	55.8
Chloride	107.5	120.5	132.7
Sodium	114.9	127.6	139.4
Magnesium	30.5	34.1	37.6
Calcium	32.8	50.4	67.9
Potassium	14.1	14.8	15.5
Sulfate	173.0	185.1	196.4
Fluoride	1.9	2.1	2.3

Table B.4: Confidence Intervals of the Mean in Concentrations (mg/L) at Roy Kizer

Parameter Name	Bayes LCI	Bayes Median	Bayes UCI
Upstream			
Orthophosphorus	<DL	0.01	0.02
Phosphorus	<DL	0.02	0.04
Nitrate	<DL	1.11	5.45
TKN	<DL	0.19	0.77
Alkalinity	161.7	207.1	247.8
Chloride	5.36	39.09	75.13
Sodium	1.54	24.39	49.62
Magnesium	4.63	8.59	12.68
Calcium	64.91	94.38	120.20
Potassium	0.38	1.96	3.67
Sulfate	15.05	49.23	79.48
Fluoride	0.11	0.31	0.53
Downstream			
Orthophosphorus	<DL	<DL	0.03
Phosphorus	<DL	0.02	0.05
Nitrate	<DL	3.50	7.13
TKN	0.01	0.46	0.93
Alkalinity	198.8	238.8	274.5
Chloride	46.44	78.99	107.20
Sodium	33.82	54.55	73.82
Magnesium	9.43	12.81	16.32
Calcium	93.12	121.30	143.70
Potassium	4.17	5.62	7.07
Sulfate	46.77	80.44	108.50
Fluoride	0.16	0.34	0.53
Reclaimed Water			
Orthophosphorus	0.26	1.59	2.92
Phosphorus	1.32	1.81	2.29
Nitrate	9.23	13.26	16.73
TKN	0.79	1.32	1.77
Alkalinity	63.2	102.1	138.3
Chloride	59.23	97.33	124.90
Sodium	60.82	85.62	104.40
Magnesium	20.84	24.59	27.95
Calcium	19.40	42.66	67.07
Potassium	13.72	15.20	16.61
Sulfate	32.15	61.11	87.58
Fluoride	0.98	1.17	1.35

Appendix C

Benthic algae carbon to phosphorus (C:P) ratios, carbon to nitrogen (C:N) ratios, and benthic algae chlorophyll *a* collected upstream and downstream of each reclaim irrigation site.

Date	Site	Benthic C:P Ratio		Benthic C:N Ratio		Benthic chlorophyll *a* (mg/m^2)	
		Upstream	Downstream	Upstream	Downstream	Upstream	Downstream
15-OCT-14	Bartholomew	11.13	10.45	2.15	1.59	35.81	57.32
	Clay/Kizer: Onion	17.66	6.08	2.56	2.17	14.30	8.40
	Clay/Kizer: Williamson	26.27	9.78	8.30	1.91	9.30	41.90
	Hancock	7.95	9.79	1.35	1.80	26.47	65.82
	Morris Williams	15.34	7.76	2.29	1.87	80.40	90.02
23-JUL-15	Clay/Kizer: Williamson	14.18	11.48	1.49	0.85	136.31	104.46
	Morris Williams	23.08	11.93	1.68	1.66	25.34	54.78
27-AUG-15	Bartholomew	10.11	12.02	1.79	1.53	72.61	105.02
	Clay/Kizer: Williamson	14.85	16.21	2.48	1.73	57.04	47.98
	Morris Williams	21.11	16.23	2.10	1.79	167.02	98.37
24-SEP-15	Bartholomew	17.50	10.91	1.40	1.85	31.99	78.70
	Clay/Kizer: Williamson	15.23	13.46	0.50	0.65	109.41	112.95
	Morris Williams	19.39	4.65	0.73	0.46	93.70	54.78
20-OCT-15	Bartholomew	18.18	8.15	1.81	1.57	30.29	223.64
	Morris Williams	21.77	11.99	1.96	1.77	57.75	52.94

Appendix D

Differences between total nitrogen in the water column, benthic C:P, benthic C:N, and benthic chlorophyll *a* for each sampling event were analyzed (Figures D1-D4). C:P ratios and C:N ratios are thought to be lower in streams where nutrients are available for uptake at high concentrations, which can result in low water column concentrations of nutrients because the periphyton has acquired the nutrients.

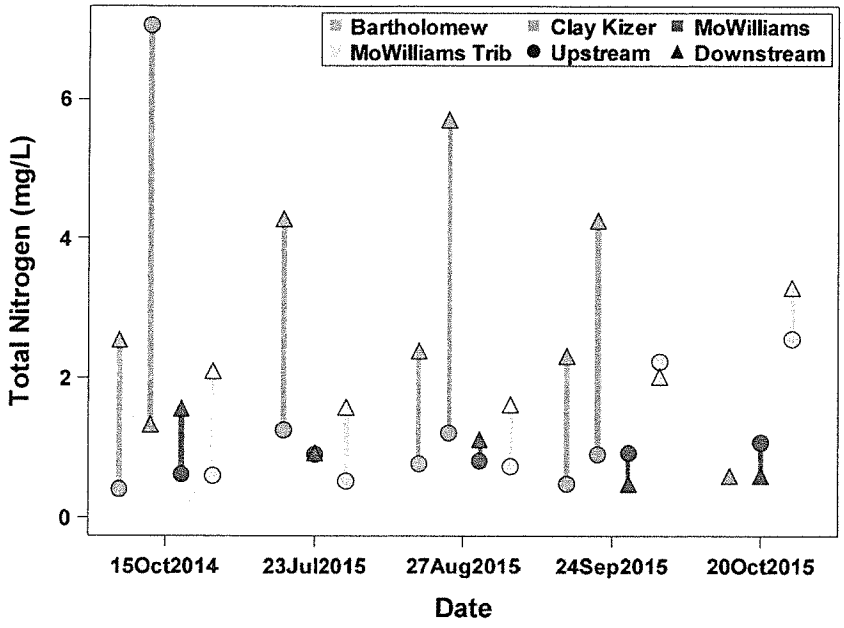


Figure D.1: Upstream and downstream total nitrogen (mg/L) collected from Bartholomew Park, Roy Kizer, and Morris Williams surface water beginning in October 2014 to December 2015.

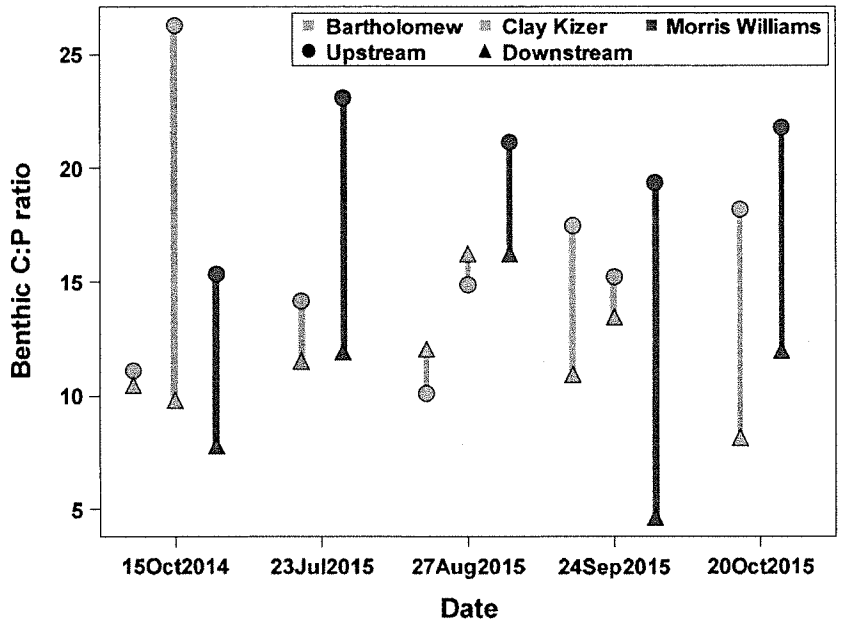


Figure D.2: Upstream and downstream benthic C:P collected from Bartholomew Park, Roy Kizer, and Morris Williams beginning in October 2014 to December 2015.

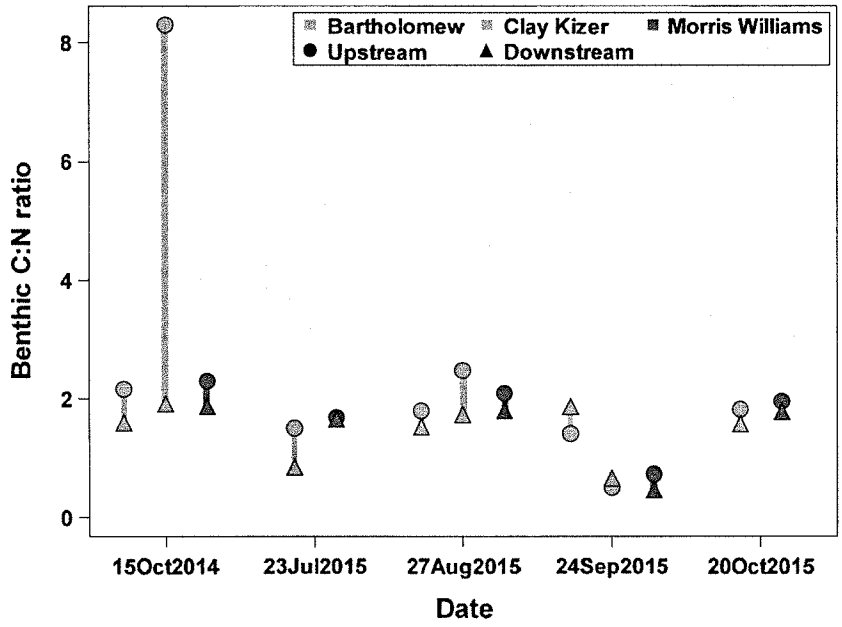


Figure D.3: Upstream and downstream benthic C:N collected from Bartholomew Park, Roy Kizer, and Morris Williams beginning in October 2014 to December 2015.

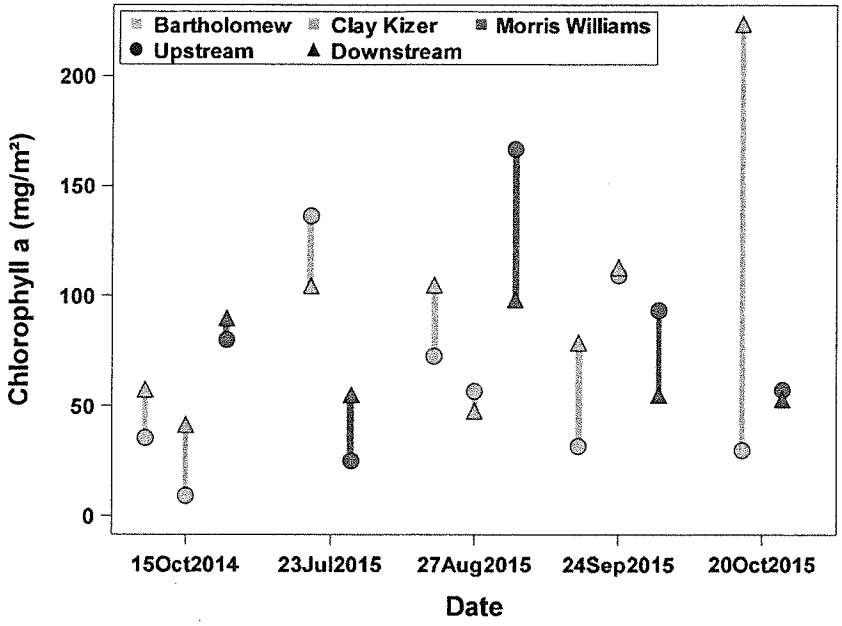


Figure D.4: Upstream and downstream benthic chlorophyll *a* (mg/m^2) collected from Bartholomew Park, Roy Kizer, and Morris Williams beginning in October 2014 to December 2015.

City of Austin
WATERSHED PROTECTION

Comparison of water quality at locations currently receiving wastewater effluent irrigation to locations planned for future wastewater effluent irrigation

DR-18-01, October 2017

Aaron Richter and Scott Hiers, P.G.

City of Austin
Watershed Protection Department
Environmental Resource Management Division

Abstract

The dominant form of wastewater disposal in the environmentally sensitive Barton Springs Zone of the Edwards Aquifer is to apply treated wastewater effluent over an irrigation field rather than to allow the effluent to be directly discharged to a stream. A Texas Land Application Permit (TLAP) is required from the Texas Commission on Environmental Quality (TCEQ) in order to dispose of 5,000 gallons per day or more of treated wastewater over an irrigation field. However, the current permitting criteria may not be enough to keep the wastewater from negatively impacting adjacent streams. The City of Austin Watershed Protection Department conducted monitoring to determine how irrigation practices from TLAP facilities may influence water quality in downgradient water resources. Samples were collected during non-storm influenced conditions at springs or downgradient stream sites adjacent to two existing TLAP facilities and two proposed facilities that have not yet begun effluent irrigation in Travis County, Texas. Results indicated that chloride, nitrate/nitrite, sodium, and strontium isotopes were elevated at both sites impacted by existing TLAP facilities. Water quality downgradient of one of the TLAP facilities also contained elevated concentrations of calcium, potassium, alkalinity, and conductivity. The drainage network to the second TLAP facility is large and complex. Non-effluent waters may be diluting some water quality parameters and it is unlikely that WPD staff can make useful inferences about the protective nature of this TLAP. Thus, the site will be dropped from the second phase of this monitoring effort.

INTRODUCTION

The Texas Commission on Environmental Quality (TCEQ) issues permits for treated wastewater effluent disposal of 5,000 gallons per day or more via no discharge irrigation through the Texas Land Application Permit (TLAP) program under Title 30 of the Texas Administrative Code chapters 222 and 309. TLAP facilities are the dominant method of centralized wastewater disposal in the Barton Springs Zone (Herrington et al. 2011). Permit requirements for storage, treatment limits, and irrigation areas in the contributing zone of the Edwards Aquifer are highly variable (Ross 2011). TLAP facilities may have unintended negative impacts on the nutrient concentrations of adjacent streams and springs (Mahler et al. 2011; Turner 2010). Effluent irrigation via similar methods under a TCEQ Beneficial Reuse Authorization (Title 30 Texas Administrative Code Chapter 210) has been documented to impact adjacent water quality (Porras et al. 2016). Data highlighting the impacts of TLAP facilities on the high quality surface and groundwater resources of the Barton Springs Zone are extremely limited (Ross 2011). Revisions to the Texas Administrative Code may be necessary to achieve TLAP requirements with consistent limitations that are protective of water quality. This report will quantify potential impact of TLAP facilities on adjacent water resources through the characterization of resources adjacent to separate currently operating TLAP facilities and two resources adjacent to facilities that are not yet operating.

METHODS

Site Description

Springs or downgradient stream sites adjacent to permitted TLAP facilities which have not yet begun effluent irrigation include Rimrock Spring, North Sycamore Creek at Foster Ranch Road, and Little Barton upstream of Hamilton Pool Road. Rimrock Spring and North Sycamore Creek at Foster Ranch Road are adjacent to Travis County Municipal Utility District (MUD) No. 4 (WQ0014430001) (Figure 1). The proposed facility consists of an activated sludge process plant, includes one storage pond with a total capacity of 140 acre-feet of storage, and is authorized to dispose of treated domestic wastewater effluent at a daily average flow not to exceed 600,000 gallons per day through surface irrigation over 220 acres in the final phase of the permit (application rate of 3.0 acre-feet per year per acre). The permit requires an ultraviolet (UV) light system for the disinfection process and contains effluent limitations for 5-day carbonaceous biochemical oxygen demand (CBOD5), total suspended solids, and ammonia.

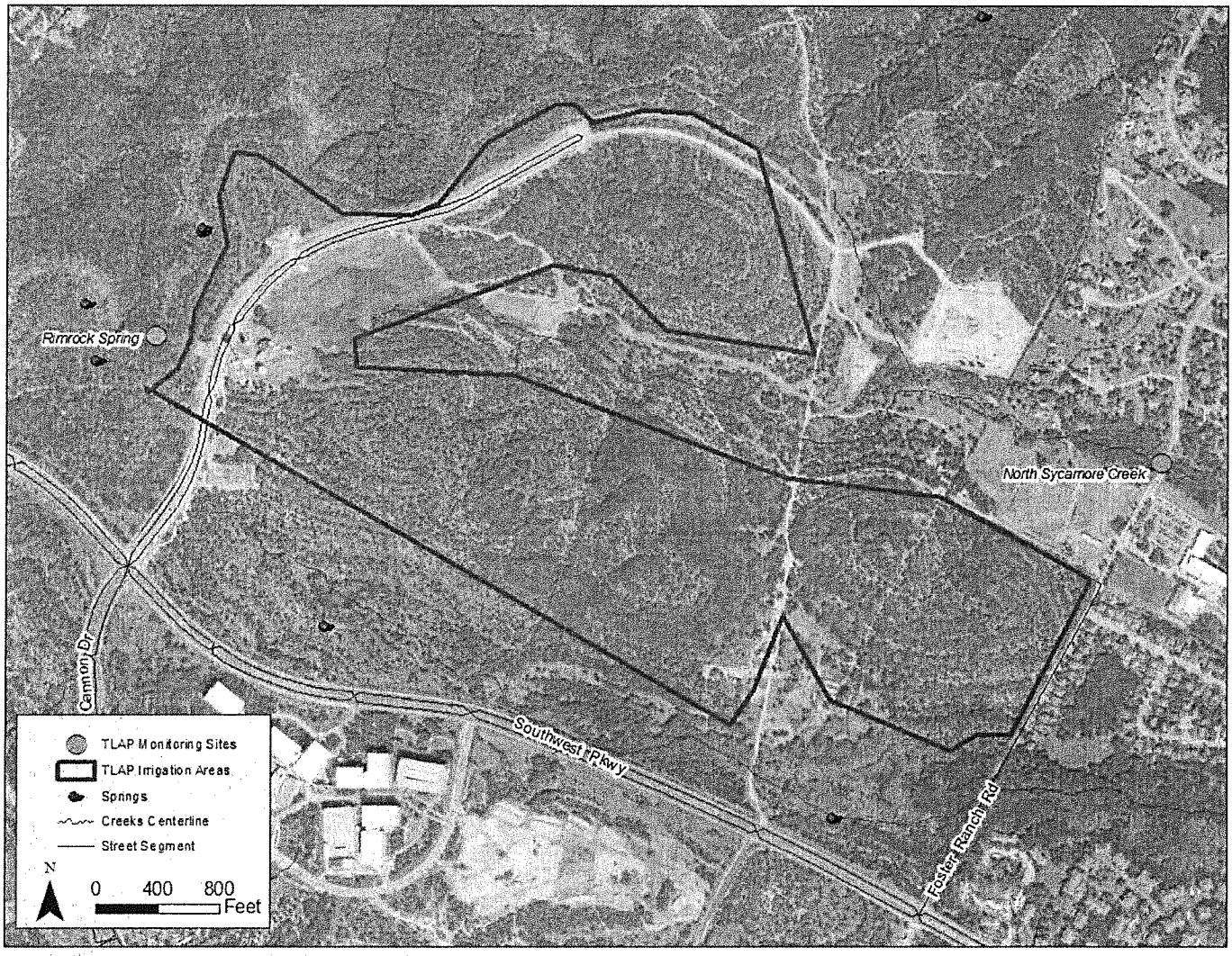


Figure 1. Rimrock Spring and North Sycamore at Foster Ranch sample sites at the future TLAP field Travis County Municipal Utility District (MUD) No. 4.

The sample site Little Barton Creek Upstream of Hamilton Pool (Figure 2) is adjacent to Lazy Nine MUD 1A and Sweetwater Austin Properties LLC (hereafter referred to as Lazy Nine) (WQ0014629001) in the Little Barton Creek Watershed. The proposed facility consists of an activated sludge process plant, includes two storage ponds with a total capacity of 90.3 acre-feet of storage in the final phase, and is authorized to dispose of treated domestic wastewater effluent at a daily average flow not to exceed 490,000 gallons per day through surface irrigation over 199.5 acres in the

final phase of the permit (application rate of 2.75 acre-feet per year per acre). The permit allows for the use of a chlorine contact chamber for the disinfection process and contains effluent limitations for CBOD5 and total suspended solids.

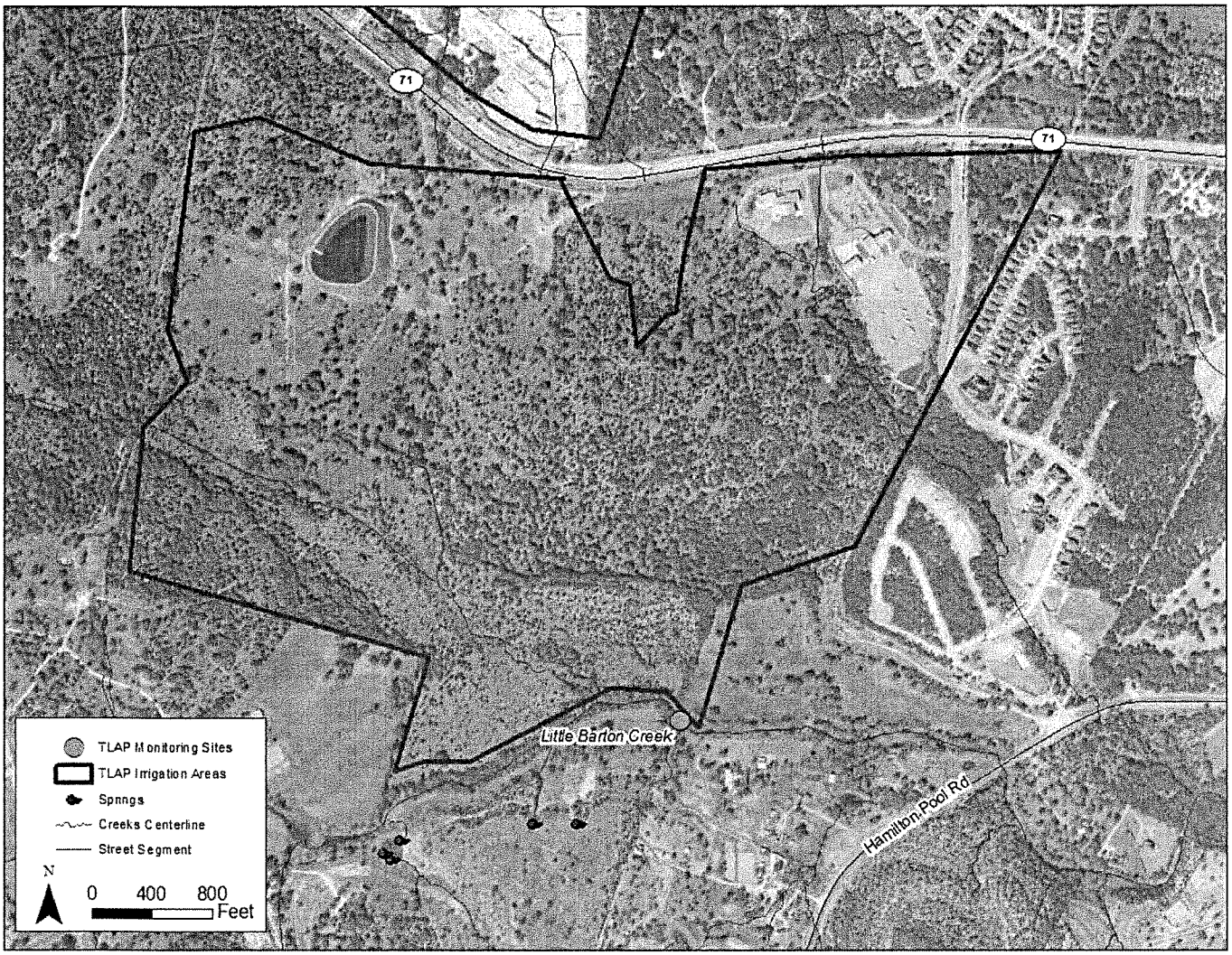


Figure 2. Little Barton Creek Upstream of Hamilton Pool sample site at Lazy Nine MUD 1A and Sweetwater Austin Properties LLC.

Springs or downgradient stream sites adjacent to permitted TLAP facilities which are currently irrigating with wastewater effluent include Short Spring Branch at Barton Creek and Barton Scenic Bluff Spring. The sample site Short Spring Branch at Barton Creek is adjacent to the Lost Creek Wastewater Treatment Facility (Figure 3) and is located on Short Spring Branch, a tributary to Barton Creek. The permit (WQ0011319001) was first issued to the Lost Creek MUD but was transferred to the City of Austin in 2009. The facility consists of one contact stabilization activated sludge plant and one complete mix activated sludge plant which are operated in parallel, includes three storage ponds with a total capacity of 69.2 acre-feet of storage in the final phase, and is authorized to dispose of treated domestic wastewater effluent at a daily average flow not to exceed 520,000 gallons per day through surface irrigation over 308.42 acres (102 acres of the Lost Creek Golf Course, 20 acres of the adjacent 38 acre tract of land, and 186.42 acres of the Coore-Crenshaw Golf Course) in the final phase of the permit. The facility is also authorized to transfer 220,000 gallons per day to Travis County MUD No. 4 (WQ0013206001). The application rate of the irrigated land is not to exceed 2.75 acre-feet per year per acre, but if the full 308.42 acres is used for irrigation of the 520,000 gallons per day of effluent, the application rate would be closer to 1.89 acre-feet per year per acre. The permit requires a chlorine contact chamber for the disinfection process and contains effluent limitations for CBOD5 and total suspended solids.

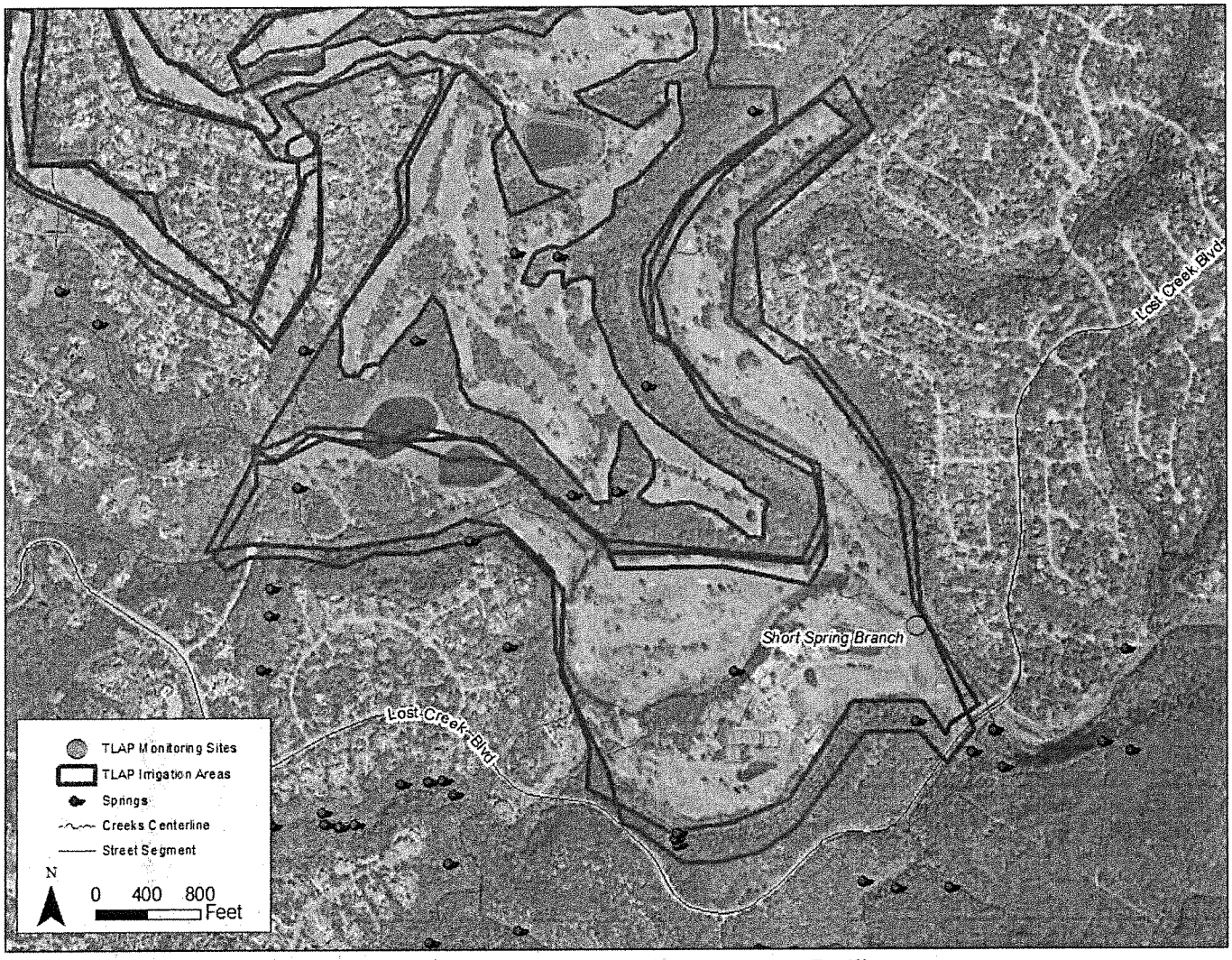


Figure 3. Short Spring Branch sample site at Lost Creek Wastewater Treatment Facility.

The sample site Barton Scenic Bluff Spring is adjacent to Barton Creek West (WQ0012786001) (Figure 4) in the Barton Creek watershed. The facility consists of a contact stabilization activated sludge process plant, includes one storage pond with a total capacity of 62.7 acre-feet of storage, and is authorized to dispose of treated domestic wastewater effluent at a daily average flow not to exceed 126,000 gallons per day through surface irrigation over 53.3 acres (application rate of 2.65 acre-feet per year per acre). The permit requires a chlorine contact chamber for the disinfection process and contains effluent limitations for CBOD5 and total suspended solids.

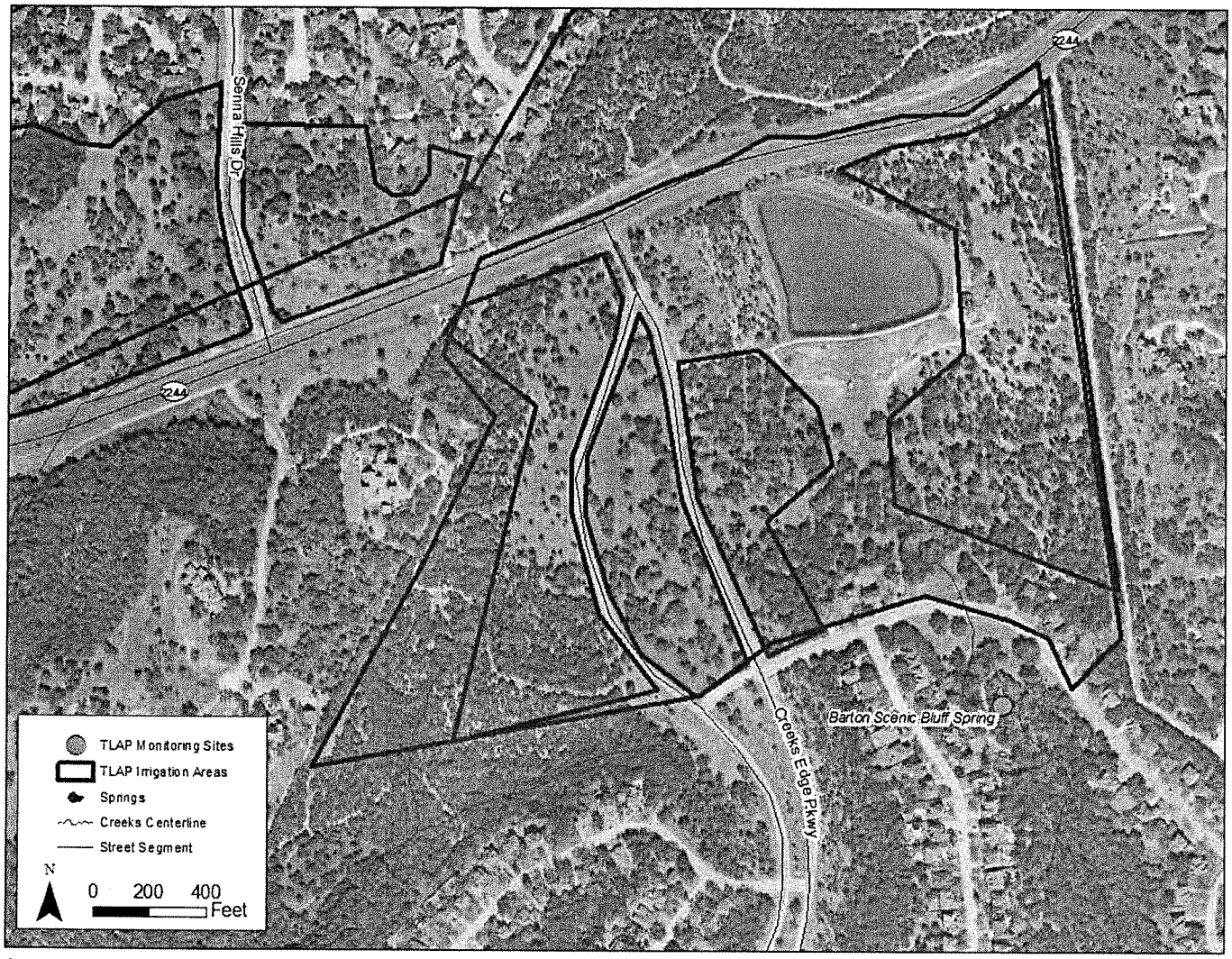


Figure 4. Barton Scenic Bluff Spring sample site at Barton Creek West.

Data Collection

Data collection was originally scheduled to begin in July 2012, and continue once per month for two years or until the Lazy Nine and Travis County MUD No. 4 began actively using their irrigation fields. Adherence to this schedule led to a large number of sampling events in which flow was not present. In response, a more flexible schedule was adopted so that sample events could be scheduled when sites were flowing (Table 1). Sample events occurred under baseflow conditions pursuant to the Watershed Protection Department Standard Operating Procedures which limited the influence of antecedent rainfall.

Table 1: Schedule of water quality sample collection at each site.

DATE	Existing operating TLAP		Future proposed TLAP		
	Barton Scenic Bluff Spring	Short Spring Branch	Little Barton Creek	Rimrock Spring	North Sycamore Creek
28-AUG-2012	X	X	X		
09-APR-2013	X	X	X	X	
24-OCT-2013	X	X	X	X	X
20-NOV-2013				X	X
22-JUL-2014	X			X	X
20-OCT-2014					X
21-OCT-2014	X	X	X		
04-DEC-2014	X	X	X		X
21-JAN-2015	X	X	X	X	X
17-FEB-2015					X
18-FEB-2015	X	X	X	X	
30-MAR-2015					X
31-MAR-2015	X	X	X	X	
29-APR-2015	X	X	X	X	X
28-JUL-2015	X	X	X	X	X
20-AUG-2015	X	X	X	X	X
02-DEC-2015	X	X	X	X	X
06-JAN-2016	X	X	X	X	X
03-FEB-2016	X	X	X	X	X
17-FEB-2016	X	X	X	X	X
25-APR-2016				X	X
09-JUN-2016				X	X
12-DEC-2016	X	X	X	X	X

Water samples were sent to Lower Colorado River Authority (LCRA) Environmental Lab Services for analysis of a suite of source water characterization parameters (Table 2). Strontium isotope analysis was sub-contracted to the Massachusetts Institute of Technology (MIT) Isotope Lab in the Department of Earth, Atmospheric and Planetary Sciences, while the nitrogen and oxygen isotope analysis was sub-contracted to Isotech Laboratories. Water samples were collected following the procedures outlined in the Water Resource Evaluation Standard Operating Procedures Manual (WRE SOP 2016). Samples used for analysis of dissolved metals were filtered in the field using a 0.45 µm filter.

Table 2: Suite of parameters collected every sampling event.

Dissolved Metals	Total Metals	Ions	Nutrients	Isotopes	Field	Other
Aluminum	Arsenic	Chloride	Ammonia as N	Strontium 86/87 Ratio	Conductivity	Alkalinity
Barium	Boron	Bromide	Nitrate/Nitrite as N	Nitrogen-15	Dissolved Oxygen	*Escherichia coli* (*E. coli*)
Calcium	Magnesium	Fluoride	Kjeldahl Nitrogen as N	Oxygen-18	pH	Organic Carbon
Copper	Potassium	Sulfate	Orthophosphorus as P		Water Temperature	Total Suspended Solids
Iron	Sodium		Phosphorus as P			Volatile Suspended Solids
Lead	Strontium					
Zinc						

Analytical Methods

Nitrogen-15 and Oxygen-18 isotopes were collected at all sites; however, samples containing less than 1 mg/L of nitrate/nitrite contain insufficient concentrations to carry out isotope analysis. Thus, samples collected at Barton Scenic Bluff Spring, which contained nitrate/nitrite concentration greater than 1 mg/L, were analyzed for N-15 and O-18 isotopes. Accordingly, due to the low number of results, these two isotopes will not be explored in this analysis.

Parameters were split into three categories *post hoc* based on the percentage of values below the detection limit at each site. The first category consisted of parameters which had a high percentage of values below the detection limit, the second contained parameters with an intermediate percentage of values below the detection limit, and the third contained parameters where no values were below the detection limit. Parameters were considered to have a high percentage of values below the detection limit if over 50% of the samples were below the detection limit at the majority of sites or if the percentage of values below the detection limit was greater than 70% at one site. When greater than 50% of the values are below the detection limit and the data set contains a small number of observations, such as this data set, calculating the mean can become difficult leading to biased estimates. In fact, this parameter set contained sites with over 70% of values below the detection limit and no method is recommended for computing a mean under such conditions. Parameters were considered to contain an intermediate percentage of values below the detection limit if they contained one value below the detection limit to approximately 50% of values below the detection limit at each site. Nitrate/nitrite as N was the only parameter in this category to have more than 50% of values below the detection limit at Rimrock Spring and North Sycamore Creek with 54% and 57% respectively.

A test of equal proportions was performed on parameters with a higher percentage of values below the detection limit (Hollander and Wolfe 1999). This was done using the CHISQ option in the TABLES statement using PROC FREQ in SAS version 9.4. This procedure computes a chi-square statistic based on the frequency of values below the detection limit at each site compared to the expected frequency if each site were assumed to have an equal proportion of values below the detection limit. If the chi-square statistic is large enough than the proportion of values below the detection limit is different between sites.

Estimates of the mean along with the 95% confidence intervals of the mean were computed for a parameter at a site if less than 50% of the values for that parameter were below the detection limit. Estimates were computed for nitrate/nitrite as N for all sites even though the percentage of points below the detection limit were above 50% at Rimrock Spring and North Sycamore Creek, thus the nitrate/nitrite as N estimates may be high at these sites. Several recommendations exist for computing means with values below the detection limit including maximum likelihood estimation (MLE), the Kaplan-Meier method, and robust Regression on Order Statistics (ROS). MLE computes a mean and a standard deviation based on a likelihood equation for values above the detection limit and below the detection limit but requires a data set with greater than 50 detected values (Helsel and Cohn 1988, Singh and Nocerino 2002, Shumway et al. 2002). The Kaplan-Meier method is a nonparametric method initially used for survival analysis where unknown values were greater than a threshold but has been adopted to work with data where the unknown value is less than a threshold. The Kaplan-Meier method estimates the cumulative distribution function associated with the data where the mean equals the area underneath this curve (Klein and Moeschberger 2003). The downside of the Kaplan-Meier method is that when only one detection limit is present in the data then the method is equivalent to simple substitution of the detection threshold. For the robust ROS method, detected values are put into a probability plot and a linear regression line is calculated from those points. The linear equation is used to impute the values below detection. These imputed values are combined with the real data values above the detection limit to calculate summary statistics (Helsel 2012). The mean and 95% confidence intervals were computed using the simple substitution method and the robust ROS method; however, values imputed through the robust ROS method were continuously above the detection limit for every parameter except *E. coli*. This lead to slightly higher estimates of the mean when compared to using the simple substitution method. Thus the mean and 95% confidence intervals reported in this document are based off of the simple substitution method using the threshold of detection as the filled in value for all parameters except *E. coli* where the robust ROS method was used to find the estimates.

The experimental design fits a hierarchical model system because the samples are clustered within sites which are then clustered into whether or not the site is downgradient of a currently operating TLAP irrigation field. The intraclass correlation coefficient is a statistic that is used to quantify the degree to which observations within a cluster resemble each other (Koch 1982). If used in a linear mixed model the intraclass correlation can give you the proportion of the total

variance in the response variable which is accounted for by the clustering. Given the following equation for a mixed model:

$$Y_{ij} = mu + u_i + \varepsilon_{ij}$$

where Y_{ij} is the j observation of the response variable in i^{th} cluster, mu is an overall mean, u_i is a random effect shared by all values in the i^{th} cluster, and ε_{ij} is unaccounted for error. Then the intraclass correlation can be computed as

$$\frac{\sigma_u^2}{\sigma_u^2 + \sigma_\varepsilon^2}$$

where σ_u^2 is the variance of u and σ_ε^2 is the variance of ε. The intraclass correlation coefficient was computed when only the clustering effect of being downgradient of an operating TLAP irrigation field was considered as a random effect and again when the clustering effect of site location was introduced into the model.

Concentrations were compared between sites for group of parameters with an intermediate percentage of values below the detection limit and the group of parameters where none of the values were below the detection limit. For the former, concentrations were compared using the Kruskal Wallis test and the Dwass, Steel, Critchlow-Fligner multiple comparison method (Hollander and Wolfe 1999). This was done using the WILCOXON and DSCF options in the NPAR1WAY procedure in SAS version 9.4. For the latter, concentrations were compared using an Analysis of Variance (ANOVA) test and the Tukey-Kramer multiple comparison method (Kutner et al. 2005).

RESULTS

Parameters in Table 3 had a high percentage of samples below the detection limit at each site. It is difficult to develop descriptive statistics about parameters when over 50% of the data is below the detection limit. Means were computed only at appropriate sites for copper, boron, and total suspended solids (Table 4) but no comparison of the mean was done for these parameters. Instead, the proportion of samples below the detection limit was compared between sites. Copper had a significantly lower proportion of samples below the detection limit at Barton Scenic Bluff Spring. Boron had a significantly higher proportion of samples below the detection limit at Rimrock Spring and North Sycamore Creek, and the proportion of samples collected at Barton Scenic Bluff Spring was significantly lower than at Little Barton Creek. Total phosphorus had a significantly lower proportion of samples below the detection limit at Short Spring Branch when compared to Barton Scenic Bluff Spring and North Sycamore Creek. Total Suspended Solids had a significantly higher proportion of sample below the detection limit when compared to Short Spring Branch and North Sycamore Creek. Volatile Suspended Solids had a significantly lower proportion of samples below the detection limit in North Sycamore Creek when compared to Barton Scenic Bluff Spring, Short Spring Branch, and Little Barton Creek (Table 3).

Parameters in Table 5 had an intermediate proportion of samples under the detection limit. Site means were computed and site comparisons were done using nonparametric methods. While the percentage of samples below detection limit for nitrate/nitrite was slightly higher than 50% at Rimrock Spring and North Sycamore Creek, the mean was still computed at these sites to compare against the other sites which had very few samples below the detection limit for nitrate/nitrite (Table 5).

Concentrations of bromide were significantly higher at Barton Scenic Bluff Spring when compared to Little Barton Creek and Rimrock Spring, which contained concentrations of bromide that were significantly lower than at any other site (Table 7). These results complement the intraclass correlation analysis because there are significant bromide concentration differences from site to site but the two sites impacted by active TLAPs are different from the three sites not impacted by active TLAPs. Chloride concentrations were significantly highest at Barton Scenic Bluff Spring but concentrations at Short Spring Branch were significantly higher than the other three sites and concentrations at Little Barton Creek were significantly higher than at Rimrock Spring or North Sycamore Creek. Sites impacted by active TLAPs had the highest concentrations of chloride which is why the intraclass correlation for chloride was substantial even when the site location was included. Fluoride was significantly highest at Rimrock Spring followed by Little Barton Creek. Nitrate/nitrite was significantly highest at Barton Scenic Bluff Spring but was not significantly different at other sites. Concentrations at Short Spring Branch were elevated but not significantly different from the non-TLAP impacted sites. This corresponds to the intraclass correlation suggesting that the nitrate/nitrite concentrations may be impacted

more by the presence of a TLAP and less on the site location. Total Kjeldal Nitrogen at Little Barton Creek was significantly lower than at all other sites. Organic carbon concentrations were highest at Short Spring Branch and North Sycamore Creek but lowest at Little Barton Creek. *E. coli* counts were highest at Little Barton Creek and North Sycamore Creek but were low at Rimrock Spring.

The intraclass correlation for the intermediately censored parameters when only the TLAP function was included in the model showed that 0 to 48% of the variance could be explained by whether or not an active TLAP drained to the site location (Table 6). However, when site location was included in the model, all of the TLAP function intraclass correlations except for nitrate/nitrite and chloride dropped to 0% and the site location explained 16 to 53% of the variance. Nitrate/nitrite and chloride showed the highest indication that an active TLAP was impacting the concentrations found in the samples since the variance explained by TLAP function ranged from 35 to 38% after site location was included (Table 6).

Parameters in Table 8 contained only those parameters that were always above the detection limit. No special analyses were needed to compute means or compare site mean concentrations. The intraclass correlation for the uncensored parameters when only the TLAP function was included in the model showed that 0 to 68% of the variance could be explained by whether or not an active TLAP drained to the site location (Table 9). However, when site location was included in the model, all of the TLAP function intraclass correlations except for calcium, potassium, sodium, conductivity, water temperature, and strontium 86/87 ratio dropped to 0% and the site location explained 0 to 77% of the variance.

Table 3: Number of total samples, samples under the detection limit, and percentage of samples under the detection limit for each of the 5 sites receiving drainage from the 4 TLAP irrigation areas. Barton Creek West and Lost Creek TLAPs were functioning during the sampling period while the Lazy Nine and Travis County MUD No. 4 were yet to be irrigated. Parameters were highly censored (50-90% below detection). Site percentages marked with a different letter (A, B, C) were significantly different for that parameter.

Parameter	Detection Limit	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
		Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
		Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent
Aluminum	1.5 µg/L	15	11	73	16	12	75	15	11	73	13	10	77	7	4	57
Copper	0.4 µg/L	15	6	40^{A}	16	14	88^{B}	15	14	93^{B}	13	12	92^{B}	7	7	100^{B}
Iron	0.02 mg/L	15	15	100	16	16	100	15	15	100	13	13	100	7	7	100
Lead	0.4 µg/L	15	15	100	16	16	100	15	15	100	13	13	100	7	7	100
Zinc	1.5 µg/L	15	13	87	16	14	88	15	15	100	13	11	85	7	7	100
Arsenic	0.7 µg/L	15	15	100	16	14	88	15	15	100	13	13	100	7	7	100
Boron	0.02 mg/L	15	0	0^{A}	16	1	6^{AB}	15	4	27^{B}	13	11	85^{C}	7	5	71^{C}
Ammonia as N	0.008 mg/L	15	14	93	16	12	75	15	14	93	13	9	69	7	6	86
Orthophosphorus	0.004 mg/L	14	14	100	16	15	94	15	15	100	13	13	100	7	7	100
Total Phosphorus	0.008 mg/L	15	15	100^{B}	16	11	69^{A}	15	13	87^{AB}	13	12	92^{AB}	7	7	100^{B}
Total Suspended Solids	1 or 2 mg/L	15	11	73^{B}	16	5	31^{A}	15	6	40^{AB}	12	6	50^{AB}	7	1	14^{A}
Volatile Suspended Solids	1 or 2 mg/L	15	15	100^{B}	16	15	94^{B}	15	15	100^{B}	12	10	83^{AB}	7	4	57^{A}

Table 4: Means and 95% confidence interval for highly censored parameters where the site percentage of data below detection limit was 50% or less.

Parameter	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
	Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
	Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval	
Copper (µg/L)	1.08	0.89	1.32												
Boron (mg/L)	0.247	0.197	0.309	0.099	0.080	0.123	0.060	0.048	0.075						
Total Suspended Solids (mg/L)				1.36	1.06	1.76	1.87	1.44	2.43	2.34	1.74	3.13	4.31	2.94	6.33

Table 5: Number of total samples, samples under the detection limit, and percentage of samples under the detection limit for each of the 5 sites receiving drainage from the 4 TLAP irrigation areas. Barton Creek West and Lost Creek TLAPs were functioning during the sampling period while the Lazy Nine and Travis County MUD No. 4 were yet to be irrigated. Parameters were intermediately censored (1-50% below detection limit).

Parameter	Detection Limit	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
		Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
		Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent
Bromide	0.008 mg/L	14	1	7	16	1	6	15	1	7	13	2	15	7	0	0
Chloride	0.4 mg/L	14	0	0	16	0	0	15	1	7	13	0	0	7	0	0
Fluoride	0.02 mg/L	13	1	8	15	0	0	14	0	0	12	0	0	7	0	0
Nitrate/Nitrite as N	0.008 mg/L	15	0	0	16	0	0	15	3	20	13	7	54	7	4	57
Total Kjeldahl Nitrogen	0.080 mg/L	15	3	20	16	0	0	15	5	33	13	4	31	7	0	0
Organic Carbon	0.2 mg/L	15	0	0	16	0	0	15	0	0	13	1	8	7	0	0
E. coli	1 MPN/100 mL	15	5	33	16	0	0	15	1	7	12	3	25	7	1	14

Table 6: Intraclass correlation for intermediately censored parameters (1-50% below detection limit) for a model that includes only a TLAP function cluster and a model which contains cluster effects of TLAP function and site location.

Parameter	ICC TLAP Function only	ICC TLAP function and Site Location	
		TLAP Function	Site Location
Bromide	0.25	0	0.52
Chloride	0.48	0.35	0.47
Fluoride	0.26	0	0.53
Nitrate/Nitrite as N	0.42	0.38	0.16
Total Kjeldahl Nitrogen	0.07	0	0.23
Organic Carbon	0	0	0.34
E. coli	0.05	0	0.40

Table 7: Means and 95% confidence interval for intermediately censored parameters. Site means marked with a different letter (A, B, C, D) were significantly different for that parameter.

Parameter	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
	Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
	Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval	
Bromide (mg/L)	0.204^{C}	0.177	0.230	0.158^{BC}	0.133	0.183	0.131^{B}	0.106	0.157	0.038^{A}	0.010	0.065	0.168^{BC}	0.131	0.205
Chloride (mg/L)	112.2^{D}	103.6	120.9	46.3^{C}	38.2	54.4	29.5^{B}	21.1	37.9	14.9^{A}	5.9	23.9	12.9^{A}	0.7	25.2
Fluoride (mg/L)	0.114^{A}	0.096	0.135	0.143^{A}	0.122	0.168	0.211^{B}	0.179	0.249	0.403^{C}	0.337	0.482	0.139^{A}	0.110	0.176
Nitrate/Nitrite as N (mg/L)	1.762^{B}	1.014	3.061	0.365^{A}	0.214	0.624	0.143^{A}	0.082	0.249	0.152^{A}	0.084	0.275	0.106^{A}	0.047	0.239
Total Kjeldahl Nitrogen (mg/L)	0.253^{B}	0.186	0.344	0.319^{B}	0.237	0.429	0.107^{A}	0.079	0.145	0.265^{B}	0.191	0.369	0.318^{B}	0.203	0.498
Organic Carbon (mg/L)	1.97^{B}	1.64	2.37	3.00^{C}	2.51	3.59	1.36^{A}	1.13	1.64	2.91^{BC}	2.40	3.55	3.86^{C}	2.95	5.05
E. coli (MPN/100mL)	47^{AB}	43	50	34^{A}	31	37	190^{B}	183	197	18^{A}	16	21	269^{B}	257	282

Table 8: Number of total samples, samples under the detection limit, and percentage of samples under the detection limit for each of the 5 sites receiving drainage from the 4 TLAP irrigation areas. Barton Creek West and Lost Creek TLAPs were functioning during the sampling period while the Lazy Nine and Travis County MUD No. 4 were yet to be irrigated. Parameters were uncensored (0% below detection limit).

Parameter	Detection Limit	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
		Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
		Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent	Total	Under Limit	Percent
Barium	0.4 µg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Calcium	0.07 mg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Magnesium	0.07 mg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Potassium	0.07 mg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Sodium	0.07 mg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Strontium	0.4 µg/L	15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Sulfate	0.4 mg/L	14	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Alkalinity	20 mg/L	14	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Conductivity		15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Dissolved Oxygen		14	0	0	15	0	0	14	0	0	12	0	0	7	0	0
pH		15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Water Temperature		15	0	0	16	0	0	15	0	0	13	0	0	7	0	0
Strontium 86/87		13	0	0	14	0	0	13	0	0	11	0	0	6	0	0

Table 9: Intraclass correlation for uncensored parameters for a model that includes only a TLAP function cluster and a model which contains cluster effects of TLAP function and site location.

Parameter	ICC TLAP Function only	ICC TLAP function and Site Location	
		TLAP Function	Site Location
Barium	0	0	0.67
Calcium	0.34	0.1	0.72
Magnesium	0.08	0	0.65
Potassium	0.41	0.26	0.43
Sodium	0.56	0.41	0.5
Strontium	0.4	0	0.77
Sulfate	0.05	0	0.55
Alkalinity	0.01	0	0.57
Conductivity	0.27	0.08	0.61
Dissolved Oxygen	0	0	0.51
pH	0.25	0	0.81
Water Temperature	0.09	0.08	0
Strontium 86/87	0.68	0.47	0.48

Concentrations of barium at Little Barton Creek and Barton Scenic Bluff Spring were significantly higher than at other locations with no difference between the other three locations (Table 10). Calcium concentrations were different between site locations with Barton Scenic Bluff Spring samples containing the highest concentrations followed by Short Spring Branch and Little Barton Creek, then North Sycamore Creek, and finally Rimrock Spring. This corresponds well to the intraclass correlation which showed site location to explain a large amount of variation in calcium data. While both sites impacted by active TLAPs have higher concentrations of calcium, Little Barton Creek also contains calcium concentrations close to Short Spring Branch concentrations so the variance explained by the presence of TLAP impacts is relatively low. Magnesium was also site dependent with Rimrock Spring containing the highest concentrations and Short Spring Branch the lowest concentrations. Potassium concentrations were highest at Barton Scenic Bluff Spring and lowest at Little Barton Creek and North Sycamore Creek. The trend in potassium concentrations is similar to the trend for calcium except that Rimrock Spring contains higher concentrations of potassium instead of Little Barton Creek which contains higher concentrations of calcium. Sodium concentrations at Barton Scenic Bluff Spring were significantly higher than at other sites followed by Short Spring Branch. The intraclass correlation for sodium was high for both the presence of an active TLAP and the site location because the active TLAP locations contained high concentrations but were not similar to each other. Strontium concentrations at Rimrock Spring were significantly higher than at other sites followed by Little Barton Creek. Sulfate concentrations were significantly lowest at Sycamore Creek. Alkalinity at Barton Scenic Bluff Spring was significantly higher than at other sites. Conductivity at Barton Scenic Bluff Spring was significantly higher than at other sites while conductivity at North Sycamore Creek was significantly lower than at other sites. Dissolved Oxygen was significantly lower at Barton Scenic Bluff Spring and Rimrock Spring. The pH at Barton Scenic Bluff Spring was almost neutral and significantly lower than at the other sites while the pH at North Sycamore Creek was more basic and significantly higher than at other sites. Water temperature was significantly higher at Barton Scenic Bluff Spring when compared to Rimrock Spring which is why the intraclass correlation showed some variance explained by the presence of an active TLAP for water temperature. The strontium 86/87 ratio was significantly highest at Barton Scenic Bluff Spring followed by Short Spring Branch, the two Travis County MUD sites, and was lowest at Little Barton Creek. The intraclass correlation was high for the presence of an active TLAP in both models for strontium 86/87 because the values at both sites downgradient of active TLAPs were significantly higher than at the three sites not yet impacted by TLAP irrigation.

Table 10: Means and 95% confidence interval for uncensored parameters. Site means marked with a different letter (A, B, C, D) were significantly different for that parameter.

Parameter	Barton Creek West			Lost Creek			Lazy Nine			Travis County MUD No.4					
	Barton Scenic Bluff Spring			Short Spring Branch			Little Barton Creek			Rimrock Spring			North Sycamore Creek		
	Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval		Mean	95% Confidence Interval	
Barium (µg/L)	47.8^{B}	44.2	51.7	33.3^{A}	30.9	35.9	54.3^{B}	50.2	58.7	33.4^{A}	30.7	36.3	30.2^{A}	26.9	33.8
Calcium (mg/L)	127.9^{D}	123.7	132.0	91.8^{BC}	87.8	95.8	94.4^{C}	90.3	98.6	74.6^{A}	70.1	79.1	83.8^{AB}	77.8	89.9
Magnesium (mg/L)	30.5^{C}	28.2	33.1	20.8^{A}	19.2	22.5	26.8^{BC}	24.7	29.1	41.4^{D}	38.0	45.2	23.5^{AB}	20.9	26.4
Potassium (mg/L)	5.58^{C}	4.65	6.69	2.44^{B}	2.05	2.91	1.45^{A}	1.21	1.74	2.64^{B}	2.17	3.21	1.53^{A}	1.17	1.99
Sodium (mg/L)	67.6^{D}	64.3	70.9	29.1^{C}	25.9	32.2	18.5^{B}	15.2	21.8	9.1^{A}	5.6	12.6	7.5^{A}	2.7	12.3
Strontium (µg/L)	218^{A}	153	312	318^{A}	225	449	2462^{B}	1724	3516	12325^{C}	8404	18074	380^{A}	225	640
Sulfate (mg/L)	74.7^{B}	65.6	85.1	64.9^{B}	57.5	73.3	69.4^{B}	61.2	78.7	67.8^{B}	59.2	77.6	33.9^{A}	28.2	40.7
Alkalinity	343^{C}	327	361	249^{A}	237	260	264^{AB}	252	277	287^{B}	273	302	259^{AB}	242	278
Conductivity (µS/cm)	1097.4^{C}	1037.2	1157.6	699.4^{B}	641.1	757.7	693.4^{AB}	633.2	753.6	662.7^{AB}	598.1	727.4	549.8^{A}	461.6	637.9
Dissolved Oxygen (mg/L)	5.89^{A}	5.27	6.60	9.15^{B}	8.21	10.2	9.75^{B}	8.71	10.91	6.20^{A}	5.49	7.00	9.96^{B}	8.50	11.67
pH	6.99^{A}	6.90	7.08	7.85^{BC}	7.76	7.94	7.93^{CD}	7.83	8.02	7.69^{B}	7.59	7.78	8.14^{D}	8.01	8.28
Water Temp. (°C)	20.6^{B}	18.2	22.9	18.3^{AB}	16.0	20.6	17.0^{AB}	14.6	19.4	15.0^{A}	12.4	17.5	15.6^{AB}	12.1	19.1
Strontium 86/87	0.7083^{D}	0.7082	0.7083	0.7080^{C}	0.7080	0.7081	0.7076^{A}	0.7076	0.7077	0.7079^{B}	0.7078	0.7079	0.7079^{B}	0.7079	0.7079

DISCUSSION

With additional wastewater irrigation, the $^{87}Sr/^{86}Sr$ ratio of receiving waters will most likely increase over time to level equal to or greater than 0.7083 with the application of wastewater irrigation. Strontium is a fairly common alkali earth element, similar to calcium and barium. In natural water, strontium is a divalent cation with a (+2) oxidation state. The size of the Sr^{2+} ion is between Ca^{2+} and K^{+} ions and can replace calcium or potassium in a variety of rock-forming minerals including K-feldspar, gypsum, plagioclase, calcium carbonate, and dolomite. Because strontium has an electron configuration similar to that of calcium, it readily substitutes for Ca in minerals. Of the only two dominant minerals containing strontium; celestite ($SrSO_4$) and strontainite ($SrCO_3$), celestite is frequently found in sedimentary rocks. These minerals and weathering of rocks is the source of strontium in groundwater and surface water. In the sedimentary rocks, the distribution of strontium is affected by strong adsorption on clay minerals, substitution of Sr^{2+} for Ca^{2+} in carbonate minerals such as in aragonite and calcite, which are the major rock-forming minerals in limestone. As a result, groundwater found in clay-rich limestone should have higher strontium concentrations, because there is more available. In groundwater, the strontium concentration is dependent upon the initial concentration in water recharging the aquifer, precipitation, the contact time or residence time of the water, and the composition of the host-rocks through which the water flows.

Strontium 87/86 isotope ratios ($^{87}Sr/^{86}Sr$) are typically used in geologic investigations to determine the age of rocks and minerals from the quantities of rubidium (Rb) and strontium isotopes they contain. The dating method works from the fact that ^{87}Rb decays, with a half-life of 48.8 billion years, to ^{87}Sr. With such a large half-life, this means that all the ^{87}Rb present on earth is primordial. In addition, there are only two sources of ^{87}Sr, primordial and that which forms from the decay of ^{87}Rb. During the cooling of magma, as minerals precipitate or crystalize at different temperatures, Sr tends to become concentrated in the plagioclase minerals, leaving Rb in the liquid phase. Hence, this process of fractional crystallization results in the Rb/Sr ratio in residual magma to increase over time resulting in rocks with increasing Rb/Sr ratios with increasing differentiation. If the initial amount of Sr is known or can be extrapolated, the age of the rock can be determined by measuring the Rb and Sr concentrations and the $^{87}Sr/^{86}Sr$ ratio. The ratio $^{87}Sr/^{86}Sr$ in rocks varies greatly with rock type and age. The average $^{87}Sr/^{86}Sr$ ratio for rock types range from 0.702 to 0.716 (Michener and Lajtha 2007). The $^{87}Sr/^{86}Sr$ ratio of modern seawater and precipitation is about 0.7092 (Åberg et al. 1989, Capo et al. 1998). The $^{87}Sr/^{86}Sr$ of groundwater will be similar to the concentration seen in the underlying rock, so strontium isotopes ($^{87}Sr/^{86}Sr$) are routinely use in hydrochemical studies to determine sources and mixing relationships of surface and groundwater. They have proved particularly useful in determining weathering processes and quantifying end-member mixing processes.

In this study, $^{87}Sr/^{86}Sr$ ratio ranged from 0.7077 to 0.7083. Each of the four TLAP monitoring areas; Barton Creek West, Lost Creek, Lazy Nine, and Travis County MUD No. 4 have significantly different mean $^{87}Sr/^{86}Sr$ ratio concentrations for the baseline data. In addition, the Travis County MUD No. 4, which has two baseline sites; Rimrock Spring and North Sycamore Creek have similar strontium ratio mean concentrations for this TLAP irrigation site. This suggest that there is little variance within individual TLAP irrigation areas, but significant differences between different TLAP facilities and their associated irrigation areas. The differences seen in the $^{87}Sr/^{86}Sr$ ratio between TLAP sites is contributed to differences in strontium concentrations in the underlying rocks and in the treated wastewater use for irrigated, where wastewater irrigation is occurring. The assumption is that over time the $^{87}Sr/^{86}Sr$ ratio will increase to levels greater than 0.7082, which is about levels currently observed at Barton Creek West and Lost Creek.

The Barton Creek West TLAP does not seem functional and is allowing pollutants to pass through the system and into the receiving water at Barton Scenic Bluff Spring. The Lost Creek TLAP seems more protective than the Barton Creek West TLAP but could still be leaching excessive chloride, sodium, nitrate, and boron into the receiving water at Short Spring Branch. There are four possible scenarios that would explain these conditions. One scenario is that both TLAP irrigation fields are functioning similarly, but the effluent from the Lost Creek facility has lower concentrations of the tested parameters, thus the receiving water at Short Spring Branch is still less impacted when compared to Barton Scenic Bluff. The second scenario is that the requirements of the Lost Creek TLAP are more protective than the requirements for the Barton Creek West TLAP so that more pollutants are getting bound in the soils of the irrigation field or that more of the wastewater effluent is lost due to evapotranspiration (ET) at the Lost Creek TLAP field and not as much effluent arrives at Short Spring Branch. The third scenario is that the Lost Creek TLAP is not protective but it is located in an area with a large drainage area so that dilution is dampening the impact to the receiving water. Finally, the fourth scenario is some combination of the three other scenarios.

Currently there is no way to analyze the first scenario described above because the City of Austin Watershed Protection Department does not currently know the concentrations in the effluent applied to the irrigation fields at either TLAP facility. It is unlikely that City staff would be given permission to sample water to be irrigated onto TLAP fields and thus it may be impossible to obtain this information.

The Lost Creek facility only has 6.5 acre-feet more storage volume and is authorized to dispose of treated domestic wastewater effluent at a daily average flow approximately four times higher than the Barton Creek West facility, but the Lost Creek facility has approximately 5.8 times the amount of irrigation land to apply effluent. While each facility has roughly the same permitted application rate (2.75 at Lost Creek vs 2.65 acre-feet per year per acre at Barton Creek West) the calculated application rate using the permitted daily average flow and area of irrigation land would be lower at the Lost Creek facility (1.89 acre-feet per year per acre). It is possible that conditions present at the Lost Creek facility are more protective than conditions at the Barton Creek West facility and not as much effluent is leaching into the receiving water downgradient of the Lost Creek facility. This would coincide with the strontium 86/87 ratios being only slightly higher at Short Spring Branch when compared to the un-impacted sites. But strontium 86/87 ratios also support the theory of increased dilution at this site. It is unlikely that WPD will be able to discern which of these scenarios is most likely occurring through continued monitoring of this site.

CONCLUSIONS

Baseline mean $^{87}Sr/^{86}Sr$ ratio for each TLAP monitoring area are significantly different between the facilities and do not vary significantly within each individual area.

Concentrations of chloride, nitrate/nitrite, calcium, potassium, sodium, alkalinity, and conductivity were highest at Barton Scenic Bluff Spring which is influenced by irrigation water from the Barton Creek West TLAP. The pH at this location was lower than the other sites and the rate of detection for copper and boron was higher. Chloride, nitrate, calcium, potassium, sodium, alkalinity, magnesium, and sulfate concentrations were shown to be significantly impacted by irrigating areas with reclaimed water within the Critical Water Quality Zone and/or floodplain as defined by the City of Austin Land Development Code (Porras et al. 2016). Barton Scenic Bluff Spring did not show elevated sulfate or magnesium concentrations when compared to the Little Barton Creek or Rimrock Spring, which are not yet impacted by TLAP irrigation. When compared to the sulfate and magnesium concentrations found in the un-impacted sites for the reclaimed water study, concentrations of sulfate were higher in this study for all sites with the exception of North Sycamore Creek and the concentrations of magnesium were higher in this study at all sites.

Concentrations of chloride and sodium at Short Spring Branch were not as high as concentrations at Barton Scenic Bluff, but were higher than at the three sites not yet impacted by TLAP irrigation. Nitrate/nitrite concentrations were higher at Short Spring Branch when compared to the three sites not yet impacted by TLAP irrigation but not significantly higher. There was only one sample that contained concentrations of boron below the detection limit at Short Spring Branch which was less than the un-impacted sites but not significantly less. Receiving waters impacted by similar TLAP irrigation practices will likely experience elevated $^{87}Sr/^{86}Sr$ ratios along with elevated concentrations of chloride, sodium, and nitrate/nitrite. Calcium, potassium, alkalinity, and conductivity may also be elevated due to TLAP irrigation practices.

RECOMMENDATIONS

- The drainage network at Short Spring Branch is larger and more complex than at other sites in this study. In addition, the complexity of the network is a confounding factor in inferences made about the level of protection provided by the Lost Creek TLAP. It is unlikely that WPD staff will be able to monitor all of the necessary locations to assess the Lost Creek TLAP. Thus, WPD staff recommend that Short Spring Branch be dropped from future sampling.
- Continue sampling downgradient of Barton Creek West, Lazy Nine, and Travis County MUD No. 4 facilities when the latter two facilities come online in order to analyze pre- and post-TLAP facility data. The Quality Assurance Project Plan (QAPP) shall define at what point the facilities are to be considered online and sampling should recommence.
- Relocate the North Sycamore at Foster Ranch Road monitoring site closer to and downgradient of the effluent irrigation area of Travis Count MUD No.4.

REFERENCES

Åberg, G., G. Jacks, and P.J. Hamilton. 1989. Weathering rates and $^{87}Sr/^{86}Sr$ ratios: An isotopic approach. Journal of Hydrology, 109(1): p 65-78.

Capo, R.C, B.W. Stewart, and O.A. Chadwick. 1998. Strontium isotopes as tracers of ecosystem processes: theory and methods. Geoderma, 82: p. 197-225.

Helsel, D.R. and T.A. Cohn. 1988. Estimation of descriptive statistics for multiply censored water quality data. Water Resources Research, 24(12): p 1997-2004.

Helsel, D.R. 2012. Statistics for Censored Environmental Data Using Minitab and R. 2nd edition. John Wiley & Sons, Hoboken, NJ.

Herrington, C., M. Menchaca, and M. Westbrook. 2011. Wastewater disposal practices in the Barton Springs Zone. City of Austin Watershed Protection Department. SR-11-01.

Hollander, M. and D.A. Wolfe. 1999. Nonparametric Statistical Methods. 2nd edition. John Wiley & Sons, New York, NY.

Klein, J.P. and M.L. Moeschberger. 2003. Survival Analysis: Techniques for Censored and Truncated Data. Springer-Verlag, New York, NY.

Koch, G.G. 1982. "Intraclass correlation coefficient." *Encyclopedia of Statistical Sciences*. Ed. Samuel Kotz and Normal L. Johnson. John Wiley & Sons, New York, NY. p 213-217.

Kutner, M.H., C.J. Nachtsheim, J. Neter, and W. Li. 2005. Applied Linear Statistical Models. McGraw-Hill/Irwin, Boston, MA.

Mahler, B.J., M.L Musgrove, C. Herrington, T.L. Sample. 2011. Recent (2008-2010) concentrations and isotopic compositions of nitrate and concentrations of wastewater compounds in the Barton Springs Zone, South-Central Texas, and Their Potential Relation to Urban Development in the Contributing Zone. US Geological Survey. SIR-2011-5018.

Michener, R. and K. Lajtha. 2007. Stable Isotopes in Ecology and Environmental Science. Blackwell Publishing Ltd, Malden, MA.

Porras, A., A. Richter, S. Hiers, A. Clamann, M. Scoggins, C. Herrington, W. Burdick, and S. Sudduth. 2016. Reclaimed water irrigation water quality impact assessment. City of Austin Watershed Protection Department. SR-16-06.

Ross, L. 2011. Land-applied wastewater effluents impacts on the Edwards Aquifer. Prepared for the Greater Edwards Aquifer Alliance and the Save Our Springs Alliance. http://www.aquiferalliance.net/Library/GEAAPublications/GlenroseEdwardsWastewaterReport20111103.pdf

Shumway, R.H., R.S. Azari, and M. Kayhanian. 2002. Statistical Approaches to Estimating Mean Water Quality Concentrations with Detection Limits. Environmental Science & Technology, 36(15): p 3345-3353.

Singh, A. and J. Nocerino. 2002. Robust Estimation of Mean and Variance Using Environmental Data Sets with Below Detection Limit Observations. Chemometrics and Intelligent Laboratory Systems, 60(1-2): p 69-86.

Turner, M. 2010. Bear Creek Receiving Water Assessment. City of Austin Watershed Protection Department. SR-10-10.

Water Resource Evaluation Standard Operating Procedures (WRE SOP). 2016. City of Austin Water Resource Evaluation Section Standard Operating Procedures Manual.

Attachment 2

Upper Barton Creek Gain/Loss Study at Shield Ranch

City of Austin
WATERSHED PROTECTION

Upper Barton Creek Gain/Loss Study at Shield Ranch

RR-24-01
January 2024

Lindsey Sydow, P.G.
Sarah J. Zappitello, P.G.
Kelsey Parker
Abby Guidry

Abstract

The Trinity and Edwards Aquifers are regionally connected karst systems that provide crucial freshwater resources and endangered salamander habitat in semi-arid Central Texas. Trinity Aquifer springs in the Contributing Zone of the Edwards Aquifer supply baseflow to creeks, including Barton Creek. Contributing Zone creeks flow across the Edwards Aquifer Recharge Zone where they lose water to the Edwards Aquifer and – in the Barton Springs Segment of the Edwards Aquifer (BSEA) – discharge at Barton Springs and Cold Springs. As Central Texas becomes more urbanized and native landscapes become smaller, rarer, and more disconnected within the BSEA contributing watersheds, protecting land to maintain high quality baseflow in creeks and at Barton Springs is increasingly urgent. Shield Ranch, the largest conservation easement on Barton Creek, protects nearly 7,000 acres (approximately 10%) of the watershed and over six miles of the creek. This study characterized groundwater-surface water interactions along Barton Creek through Shield Ranch using standard handheld velocimeter methods during three separate gauging events from June-July 2019. The results demonstrated that Barton Creek within Shield Ranch is a net gaining stream with some local flow loss into alluvium within the creek channel. Notable gaining reaches and visible spring and seep zones were recorded. As is typical for Barton Creek during hotter and drier weather, baseflow decreased throughout the summer with correspondingly smaller net total gains across the ranch. As the overall system dried during the summer, the declining groundwater inputs indicated that the springs are gravity fed and the local water table of the Trinity Aquifer drops seasonally. Climatological changes, which will likely exacerbate the seasonal drop in the water table, coupled with increasing population growth and urbanization in the Hill Country west of Austin will continue to threaten water quality and potential natural recharge to the system, making land conservation efforts like those at Shield Ranch imperative for the future of Central Texas.

Keywords: Gain/Loss, Barton Creek, Shield Ranch, springs, Trinity Aquifer

Introduction

The City of Austin Watershed Protection Department (WPD), in partnership with Shield Ranch and the Barton Springs Edwards Aquifer Conservation District (BSEACD), conducted a gain/loss study to characterize groundwater and surface water interactions on Barton Creek throughout Shield Ranch in the summer of 2019. Shield Ranch is managed for conservation and environmental protection and is the largest conservation easement in the Barton Creek watershed, protecting nearly 7,000 acres (approximately 10%) of the watershed and over six miles of the creek (Figure 1). Conservation easements on the Ranch are held by the Nature Conservancy and the City of Austin.

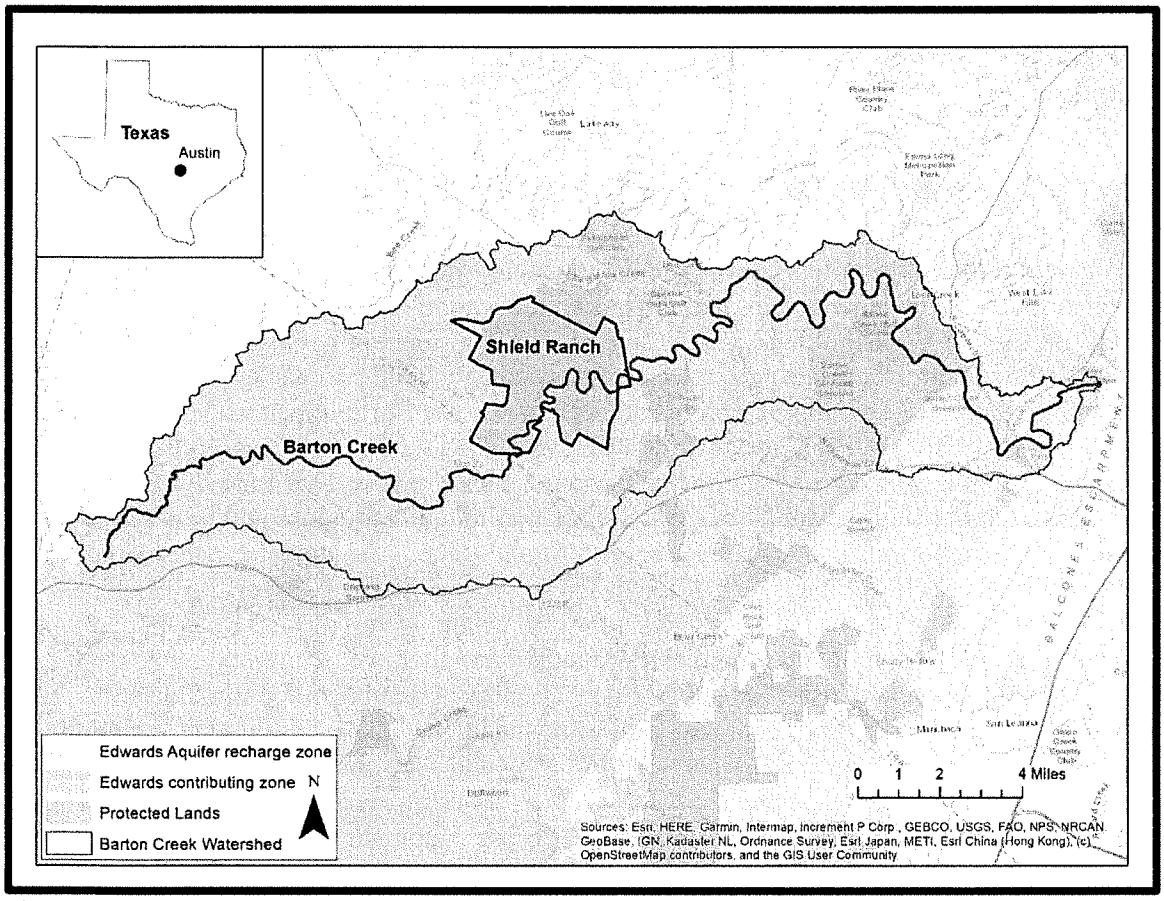


Figure 1.Shield Ranch and the Barton Creek watershed near Austin, Texas.

Trinity Aquifer-fed springs provide the dominant source of baseflow to Barton Creek, which flows downstream across the Barton Springs Edwards Aquifer (BSEA) Recharge Zone and past Barton Springs to the Colorado River. Under recharge conditions, creek water recharges the BSEA and discharges at Barton Springs and Cold Springs, both of which contribute to the total discharge of the Colorado River. The Glen Rose Limestone, which partially comprises the upper and middle Trinity Aquifer, is exposed at the surface throughout most of Shield Ranch including the channel of Barton Creek and its tributaries, although non-contiguous Edwards Limestone is also present on some isolated hilltops on site. This area of the Trinity Aquifer is also referred to as the "Contributing Zone" of the Edwards Aquifer, since rain that falls in this area contributes to

creeks that flow downstream to the Recharge Zone where the Edwards Limestone is exposed at the surface. Shield Ranch's size and location on Barton Creek in the Contributing Zone makes it important for both the water quality and quantity reaching the BSEA Recharge Zone downstream (Figure 1).

Barton Creek is a prime example of the hydrogeological connectivity between the Trinity Aquifer and the BSEA. Interactions between the Trinity and Edwards Aquifers were underestimated in the past but have become a topic of great interest to hydrogeologists and water resource managers in Central Texas. Of interest are both groundwater-surface water interactions and subsurface connectivity between the two aquifers; subsurface connectivity, while beyond the scope of this study, is introduced in Gary et al. (2011). Recent studies within the BSEA Contributing Zone on Onion Creek and the Blanco River (Hunt et al. 2017, Smith et al. 2014) as well as other creeks within the San Antonio Edwards Aquifer (Green et al. 2011) have demonstrated significant flow loss and recharge to the Trinity Aquifer. The volume of spring contributions (gains) and flow losses via recharge has not been as thoroughly characterized in the Barton Creek Watershed upstream of the Recharge Zone. Some stream gauging occurred on Barton Creek in the past which showed net flow gains upstream of the Recharge Zone (COA 1997), but comprehensive gain/loss studies have not characterized the groundwater-surface water interactions across discrete reaches of the creek during varying streamflow conditions.

This study, performed as an intern-led project over 3 sampling events in summer 2019, is an initial look at the volume of spring (groundwater) influence on the creek within Shield Ranch as well as the influence of the creek on groundwater through gain/loss measurements and analysis. The site-specific information provided herein on the groundwater-surface water interactions in one of Austin's premier high-quality creeks can support the management and protection of this valuable resource. Future studies may compare this baseline information with more urbanized watersheds or examine different, smaller, or larger portions of Barton Creek.

Methods

A gain/loss study uses a series of stream discharge measurements gauged during baseflow to quantify the gains and/or losses of flow along a stream reach. The measurements are taken as close to the same time as possible in order to evaluate spatial flow variations rather than temporal variations. The gain/loss analysis (Equation 1), essentially a water balance, is a basic mathematical and geospatial technique used frequently by hydrologists and hydrogeologists to evaluate groundwater – surface water interactions (e.g. Braun and Gryzb 2015, Hunt et al 2017). Unaccounted for gains and/or losses indicate features like springs or sinkholes submerged within the channel.

> Equation 1. Gain/loss analysis modified from Braun and Grzyb (2015) pg. 18:
> The difference between inflows and outflows, referred to as the gain (positive/increase in flow) or loss (negative/decrease in flow), Q_{GL}, is estimated as:
>
> $$Q_{GL} = Q_D - Q_U - I + D - R + E$$
>
> where:

Q_D is measured streamflow at the downstream boundary of the reach
Q_U is measured streamflow at the upstream boundary of the reach
I is measured or estimated inflows from tributaries
D is diversions from the reach
R is return flows to the reach
E is estimated evaporation losses
(Units of all variables in cubic feet per second.)

Barton Creek at Shield Ranch has no diversions or return flows. Staff analysis assumed that the diffuse inputs to baseflow in the stream were from springs. Evaporation was checked using the regional standard (LCRA daily measurement); however, the value was low enough to be within the margin of error for the stream gauging measurements (+/- 10%) and therefore was assumed to be negligible.

WPD staff conducted three separate stream gauging events along Barton Creek within Shield Ranch on June 20-21, July 10-11, and July 22-24, 2019. Sixteen sites (Figure 2) along Barton Creek within Shield Ranch were selected for flow measurements based on tributary confluences and access, with three of these sites added after the first gauging event. To quantify tributary contributions, flow was measured either: 1) both upstream and downstream of the tributary on the main stem or 2) on the tributary itself and on the main stem either upstream or downstream of the tributary. During the second stream gauging event, BSEACD staff also measured flow at more widely spaced intervals along the length of Barton Creek up and downstream of Shield Ranch, but all upstream of the Edwards Aquifer Recharge Zone.

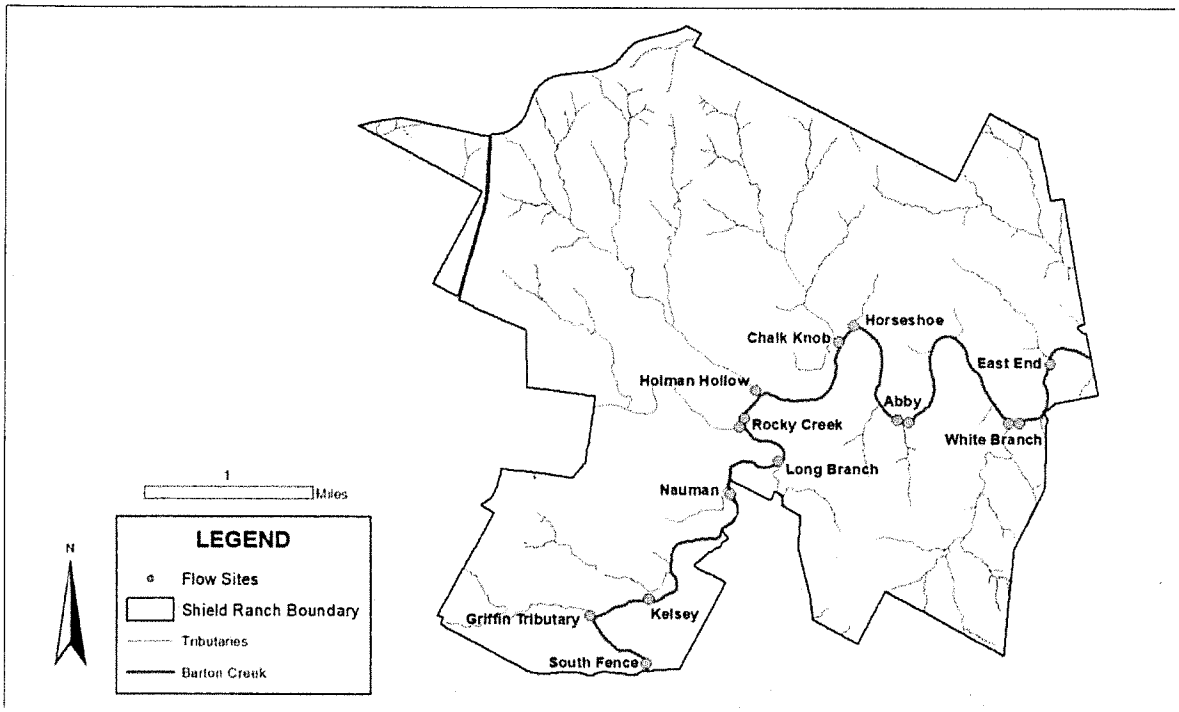


Figure 2 Measurement sites near key confluences on Shield Ranch

Stream gauging methods and techniques followed methods detailed in Turnipseed and Sauer (2010). Staff measured flow using a handheld Acoustic Doppler Velocimeter (ADV): a FlowTracker at sites with water depths greater than 0.3 ft (most sites, see Photo 1) and a Marsh McBirney flow meter at shallow sites (<0.3 feet deep). The FlowTracker calculated total discharge using the midsection method (SonTek 2007, Turnipseed and Sauer 2010). Some tributaries could not be measured due to very low flow, so flow was visually estimated.

Photo 1: Collecting a flow measurement using a Flowtracker ADV.

For quality assurance, during each event field staff collected at least two flow measurements at each site until two measurements were within 10% of each other. Staff averaged these measurements to calculate a discharge value for each site, reported in Table 1 and Figure 4 in the Results section. Net gains across Shield Ranch were calculated by subtracting discharge at the upstream-most station from discharge at the downstream-most station (i.e., to include tributary contributions) and then tributary contributions and main-stem groundwater contributions were considered separately.

Results

As the study progressed during dry, hot weather with minimal rainfall, overall baseflow in Barton Creek declined and the number of tributaries with measurable flow decreased over subsequent events as well (Figure 3). While gauging was planned for baseflow conditions, minor rainfall occurred on day two of the third sampling event, reducing the validity of these measurements. A significant storm event (see large peak in discharge on June 25) occurred between Events 1 and 2. This event was substantial enough to cause small changes to channel geomorphology (e.g. noticeable scouring or gravel deposition near some sites) between Events 1 and 2 as observed in staff field notes.

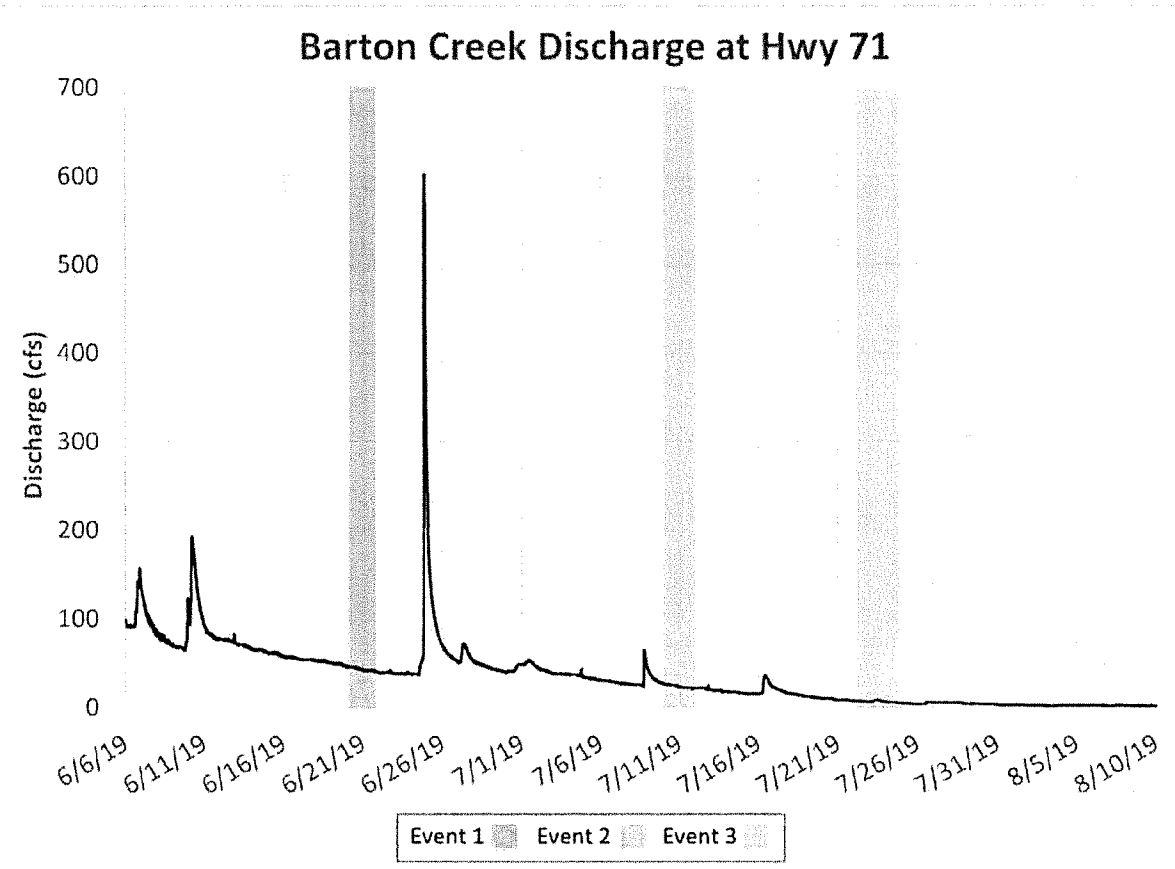


Figure 3: Discharge at USGS gaging station 08155200 on Barton Creek at Hwy 71 from June-July 2019. Each of the gauging events conducted in this study are highlighted. All measurements from Events 1 and 2 were taken under baseflow conditions, and baseflow decreased throughout the summer.

All three sampling events showed that Barton Creek is a net gaining stream across Shield Ranch, with measured creek flow increases of 52 – 162% (including tributary contributions) from the upstream end of the ranch to the downstream end (Figure 4 and Table 1).

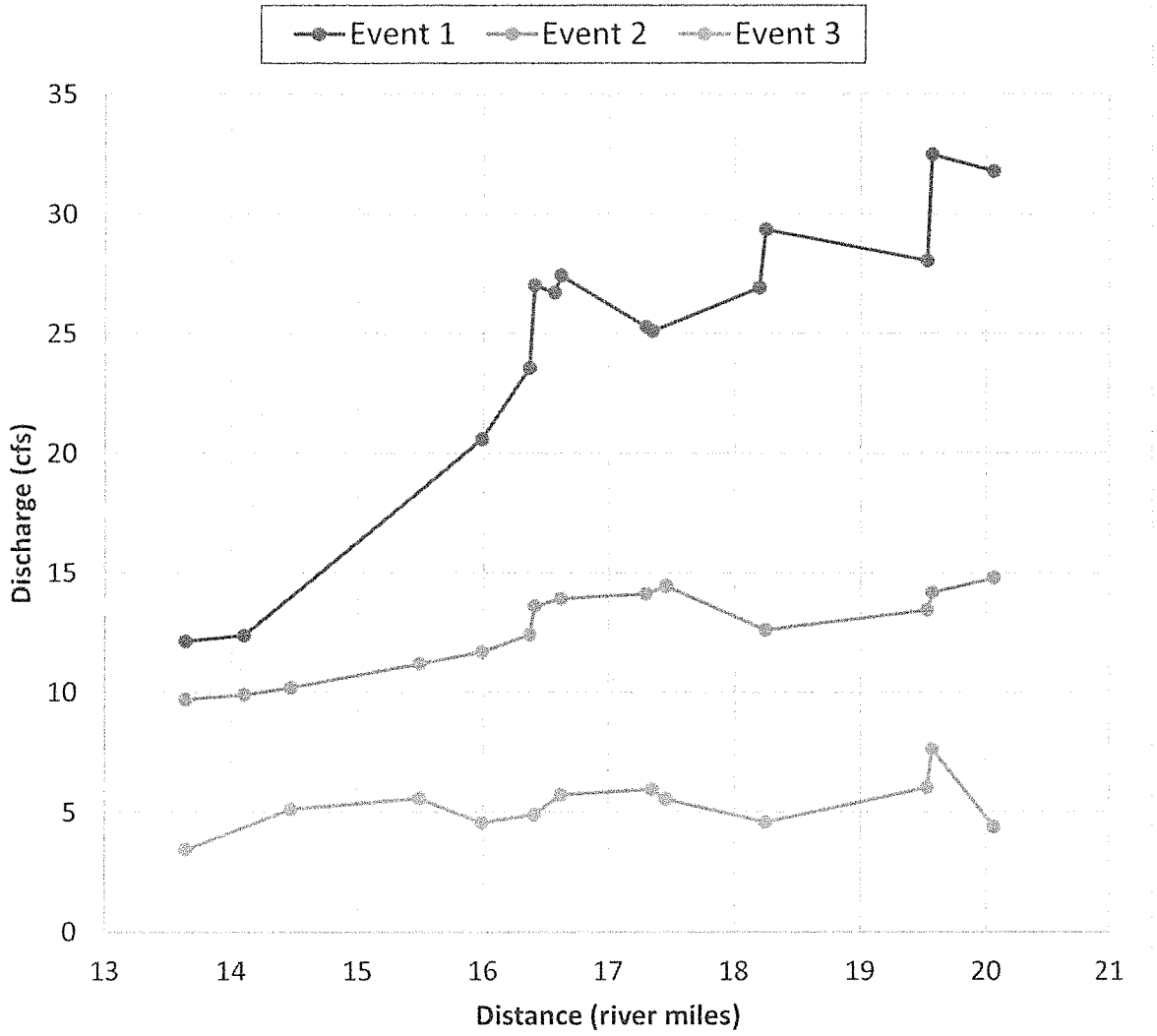


Figure 2: Gains and losses in discharge, measured in cubic feet per second (cfs) over distance (river miles) from Barton Creek headwaters. At each gauging event there were net gains across the ranch (includes tributary contributions) of 19.66 cfs, 5.09 cfs, and 0.95* cfs, respectively. Net gains across the ranch were calculated by subtracting the upstream flow measurement (South Fence) from the downstream flow measurement (East End).

*Data from Event 3 are flawed and are not an accurate representation of flow; these flaws are examined in the Discussion section.

Site Name	Location in River Miles	Flow in Cubic Feet per Second (cfs)					
		Event 1: June 20-21		Event 2: July 10-11		Event 3: July 22-24	
		Station Flow	Segment Gain/Loss	Station Flow	Segment Gain/Loss	Station Flow	Segment Gain/Loss
South Fence	13.64	12.13		9.71		3.45	
Griffin Tributary	14.1	0.25		0.2		--	
Kelsey	14.47	--		10.2	0.29	5.14	1.69
Nauman	15.49	--		11.2	1	5.58*	0.44*
Long Branch	15.99	20.6	8.22	11.69	0.49	4.58	-1*
Rocky US (calculated)	16.37	*23.57*	2.97	*12.41*	0.72	--	0.33*
Rocky Tributary	-	3.45		1.20		<0.1	
Rocky DS	16.41	27.02		13.61		4.91*	
Holman US	16.57	26.72	-0.3	--	--	--	0.83*
Holman Tributary	-	0.70		0.32		<0.1	
Holman DS	16.62	*27.42*		*13.93*		5.74*	
Chalk Knob US	17.3	25.29	-2.13	14.13	0.2	--	0.23
Chalk Knob DS	17.35	25.11		--		5.97*	
Horseshoe	17.46	--		14.46	0.33	5.56*	-0.41*
Abby US	18.2	26.91	1.8	--	-1.85	--	-0.96*
Abby DS	18.25	29.35		12.61		4.6	
White Branch US	19.53	28.05	-1.3	13.44	0.83	6.03	1.43
White Branch DS	19.57	32.49		14.19		7.64**	1.61
East End	20.06	31.79	-0.7	14.8	0.61	4.40**	-3.24
Percent of total flow gain from groundwater inputs along Main Stem Barton Creek:		66%		88%		--	
Percent of total flow gain from tributary contributions:		34%		12%		--	

Table 1: Flow measurements at each site during the three gauging events. Segment gains (green) or losses (red) are representative of the segment of Main Barton Creek upstream of the point on the table for which they are recorded.Sites not measured during the first event in June had not yet been selected. Kelsey, Nauman, and Horseshoe were added for Events 2 and 3 to provide greater detail. Italicized values were calculated from a tributary and corresponding main stem measurement. Sites not measured during Events 2 and 3 indicate tributaries that went dry or where discharge was too low to measure.

*These samples from Event 3 were collected following a rainfall event that increased flow in Barton Creek. These values cannot be compared to the other measurements collected during Event 3, thus any gains or losses based on these measurements are invalid and should be disregarded.

**The two most downstream sites were moved due to low flow conditions during the final gauging event and are not directly comparable to Events 1 and 2.

The upstream-most segment of Barton Creek from "South Fence" to the Rocky Creek confluence had the greatest and most consistent gains across the three events. Seep zones were observed, either visually or as temperature gradients presumed to be inflows at several locations on Barton Creek. Stark temperature gradients or cold inflows from channel alluvium were observed at the Long Branch confluence, Rocky Creek confluence, Holman Hollow, and downstream of the Abby confluence. Several discrete springs and seep zones were observed on the left bank of Barton Creek from Chalk Knob to Horseshoe (Photos 2-5). Horseshoe tributary was actually a short spring run created by several small seeps. Groundwater contributions along the main stem of Barton Creek were responsible for approximately 66% of total flow gain across Shield Ranch during Event 1 and 88% of total flow gain during Event 2.

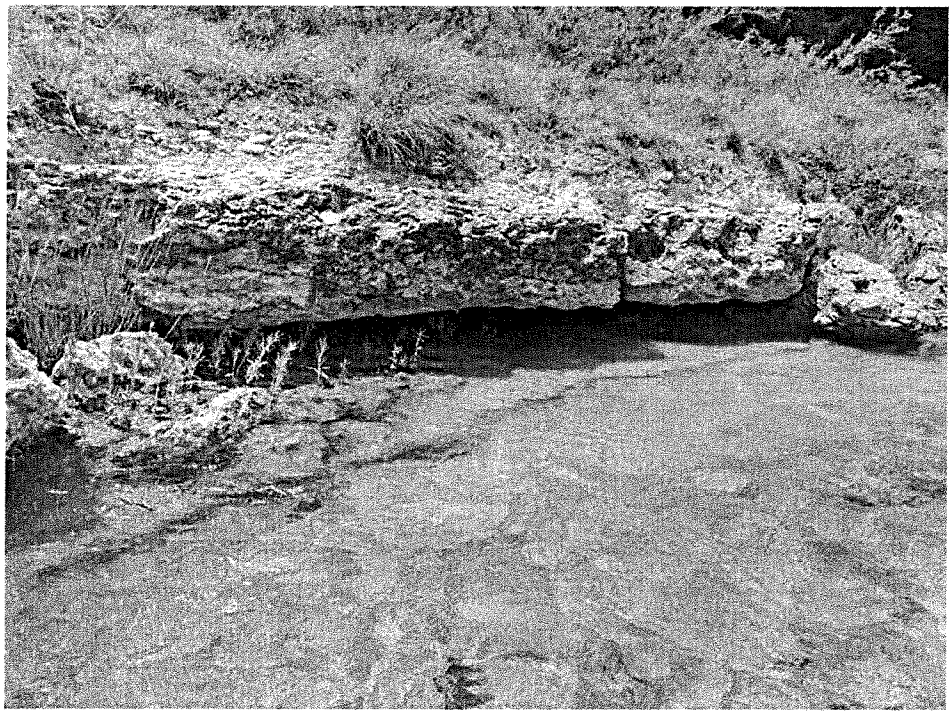


Photo 2: Undercut Glen Rose outcrop with seep zone underneath overhang

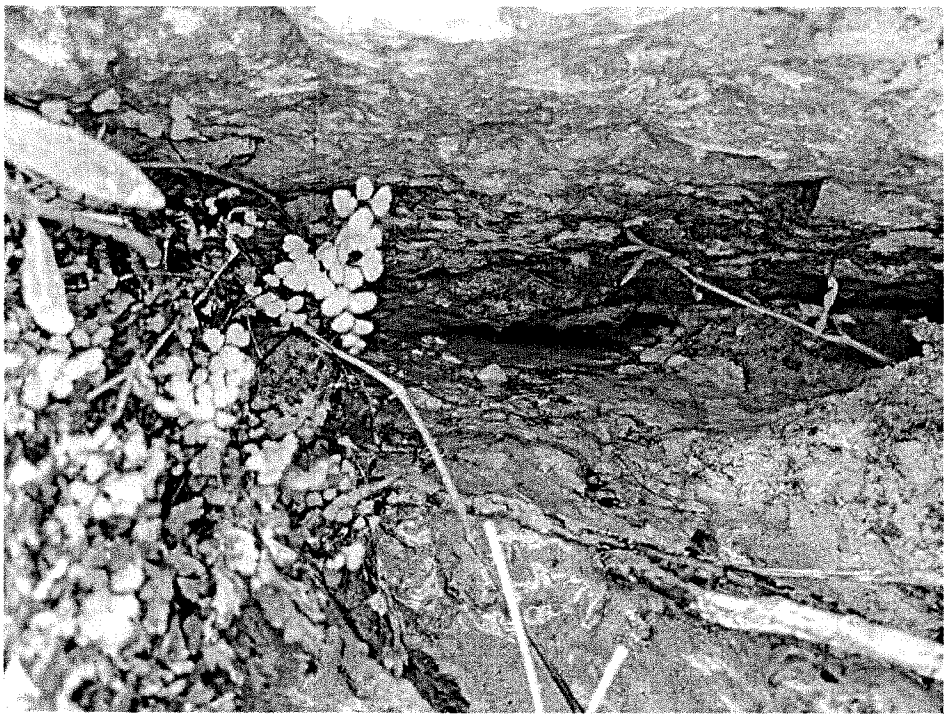


Photo 3: One of several springs under overhanging Glen Rose outcrop

Photo 4: Spring along left bank of Barton Creek between Chalk Knob and Horseshoe

Photo 5: One discrete orifice of Horseshoe Springs

During Event 2, collaborators from BSEACD gauged flow at other Contributing Zone sites along Barton Creek both upstream and downstream of Shield Ranch. Significant flow gains are present throughout Barton Creek across the Contributing Zone (Figure 5). The detail across Shield Ranch illustrates the value of this type of flow measurement study.

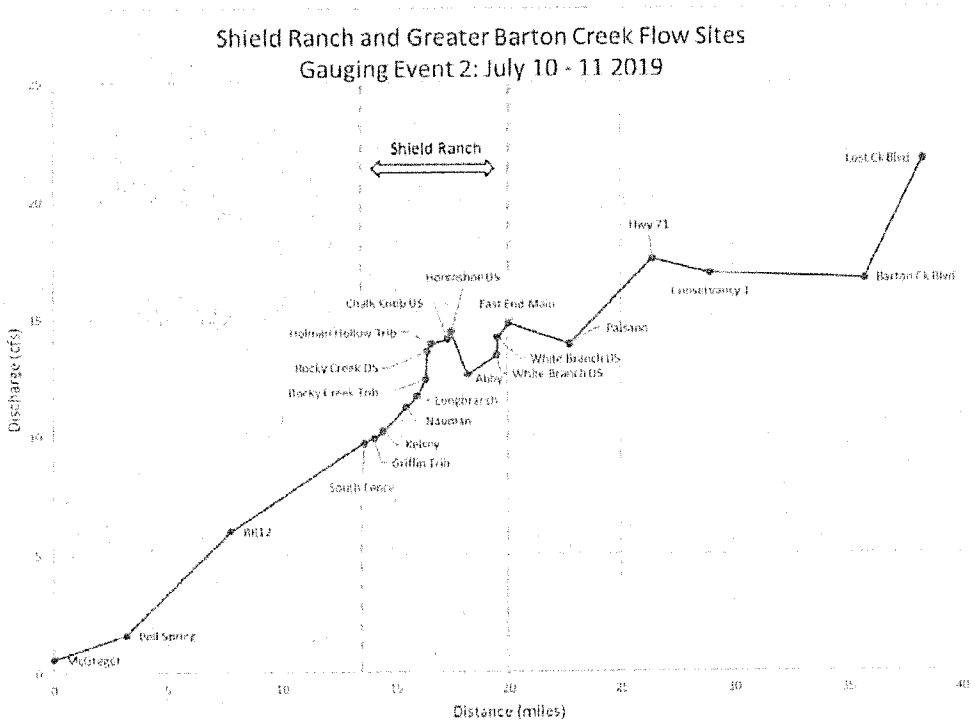


Figure 3: Flow measured during Gauging Event 2 on the upper 40 miles of Barton Creek. Shield Ranch extent shown in yellow.

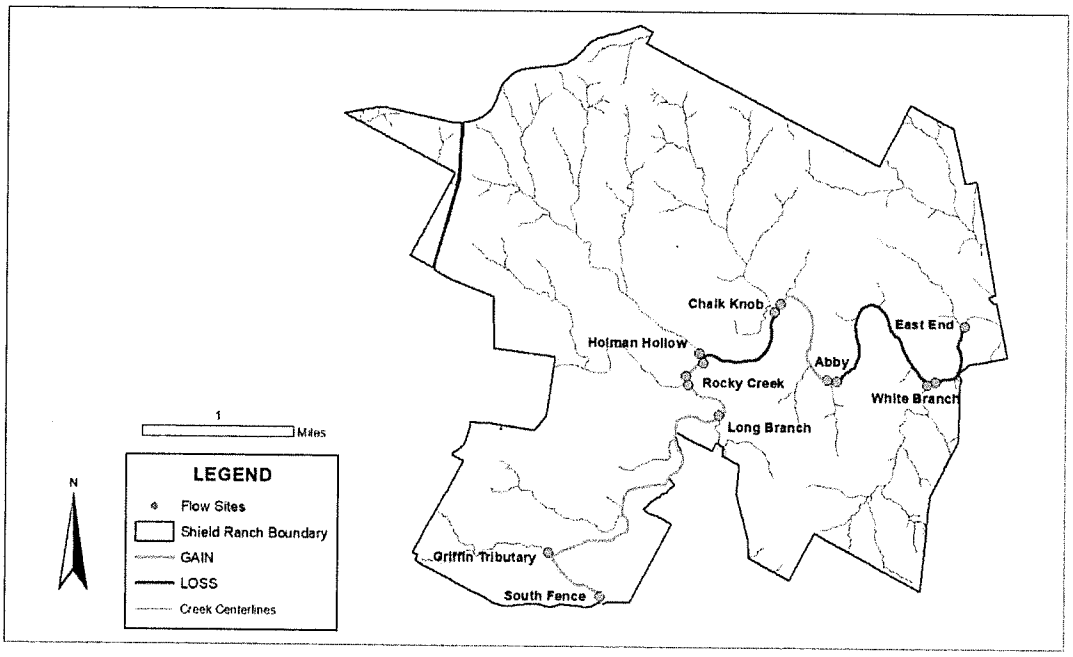


Figure 4: Gauging Event 1 Gains and Losses. Losses at the downstream end of the Ranch were very small (see Table 1), and all losses were within the QC margin of error for a measurement.

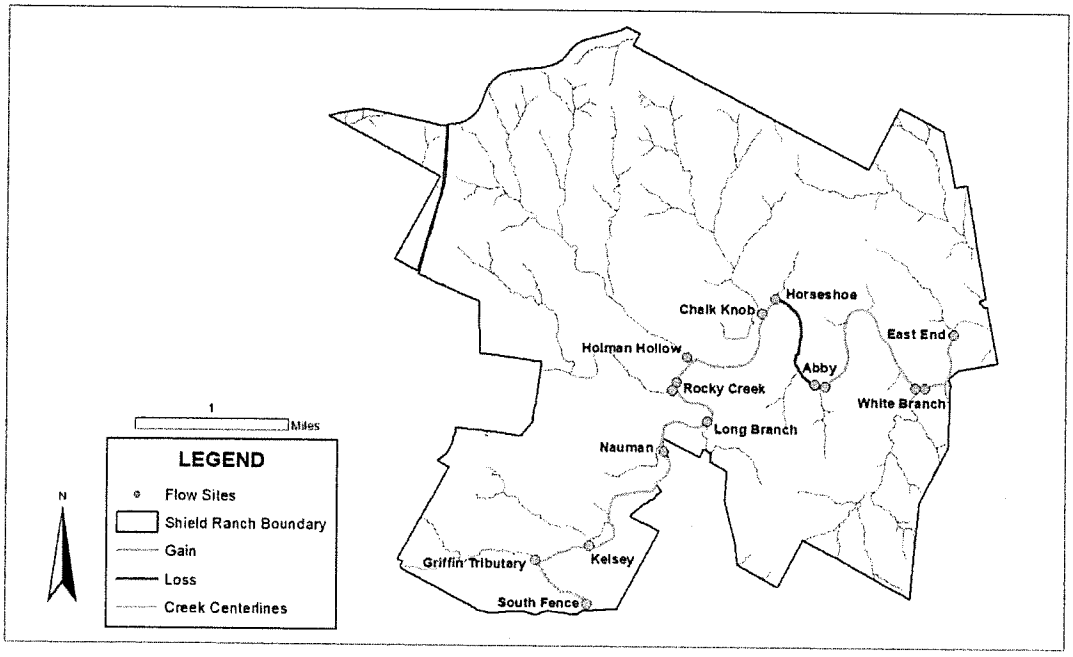


Figure 5: Gauging Event 2 Gains and Losses. The documented loss was relatively small.

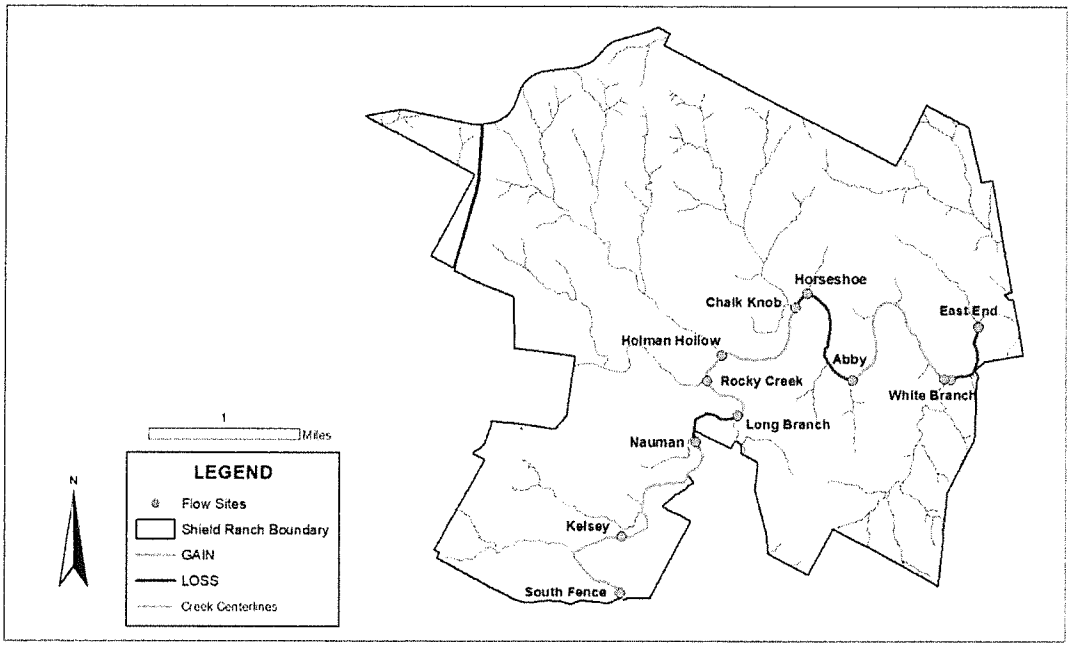


Figure 6: Gauging Event 3 (flawed) Gains and Losses. Low flows during this event made measurements difficult, and some stations were moved due to unsuitability. Additionally, a rainfall event that occurred in the middle of Event 3 rendered most of the measurements useless, including the ones that depict a loss between Nauman and Long Branch.

Figures 6-8 spatially represent the gaining and losing reaches within Shield Ranch during each of the gauging events. Main stem reaches upstream of Holman Hollow consistently showed flow gains (measurement from Event 3 is invalid). Reaches with flow losses were typically on the lower end of the ranch, and measurements frequently had to be taken at sites with alluvial channel bottoms where all flow may not have been detectable via ADV methods. Given that (1) a likely small, but unknown, percentage of flow could not be measured through the alluvium, and (2) the reaches with recorded losses were not consistent across the three gauging events, it is not possible to classify these small and inconsistent flow reductions as losses to karst features.

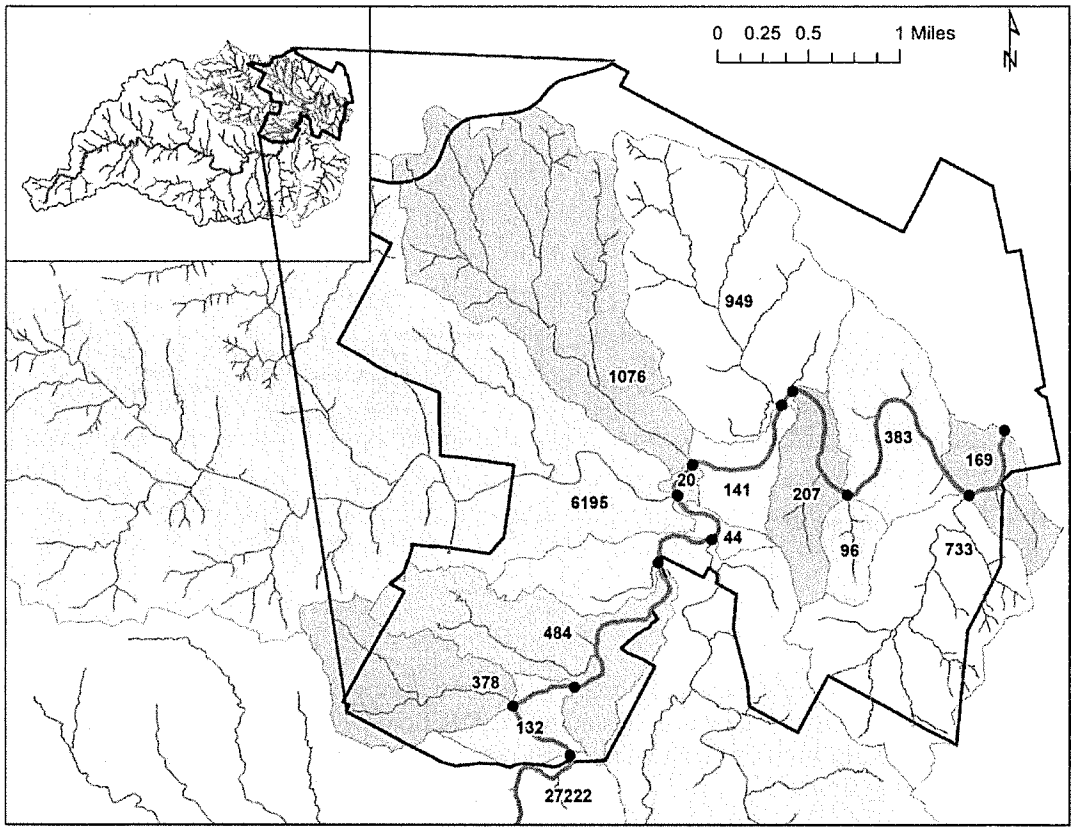


Figure 9: Drainage areas (in acres) to each flow site along Barton Creek within Shield Ranch. Several of these tributary watersheds are completely or nearly completely within the conservation easement boundaries. 37% of the study drainage area is protected by the Shield Ranch boundaries.

Figure 9 shows the areas of each subwatershed that drain to a gauging station along Barton Creek in this study. Percent of total flow gain in Events 1 and 2 versus corresponding subwatershed area is shown in Figure 10. A Pearson's product-moment correlation indicated a positive but statistically insignificant relationship between percent of total flow gain and drainage area (Event 1: ρ=0.56, P = 0.14; Event 2: ρ=0.47, P = 0.12), indicating flow gains are gravity-fed springs from the Trinity Aquifer rather than overland flow. Event 3 data were not considered.

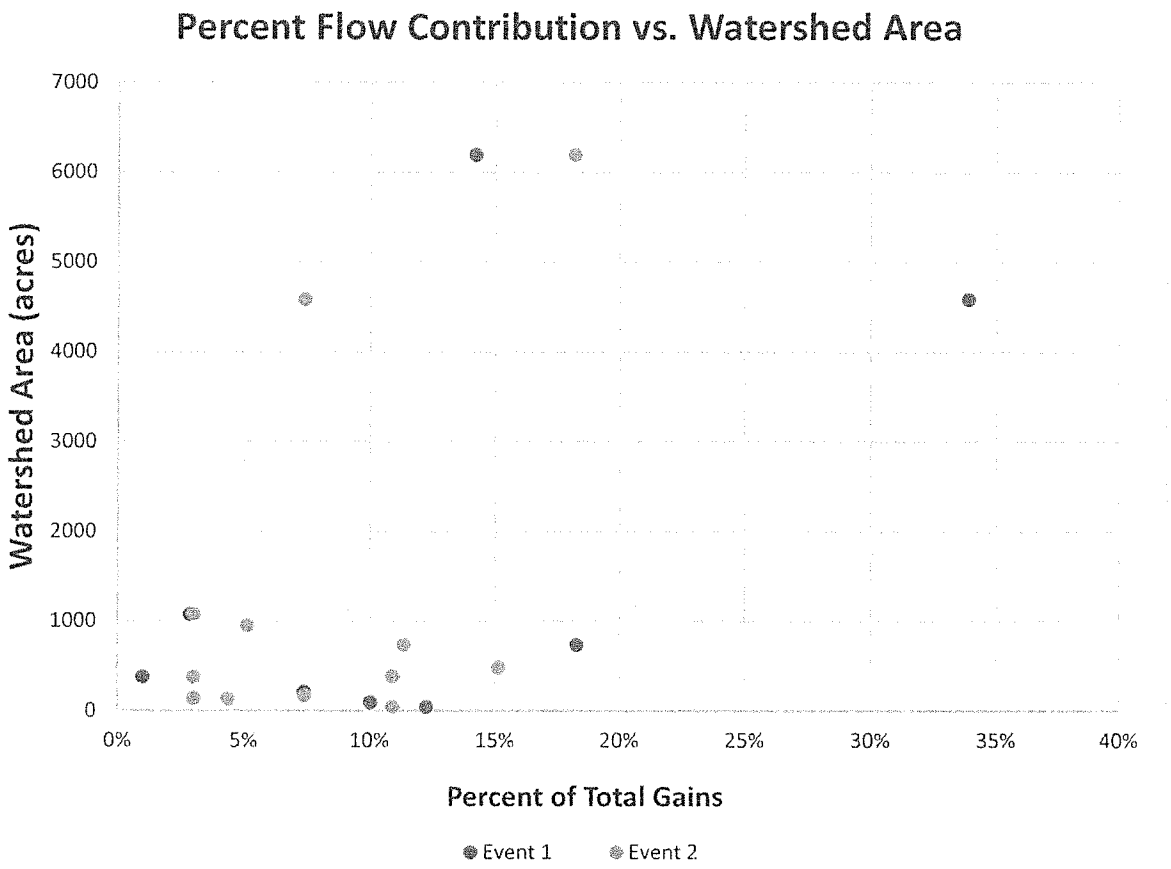


Figure 10: The percentage of flow gained by a segment was plotted against drainage area to help visualize any potential relationship between. Event 3 was not considered due to flaws discussed in the following section.

Discussion

Site Selection

Detailed flow measurements illustrate challenges in conducting this study as well as interpreting the results. Poor measurement cross sections, either due to water depth or channel bottom composition, made data interpretation most difficult during lower flows. While the ideal cross section for measuring flow at a site has a bedrock or less permeable channel bottom (Rantz et al., 1982), it was not always possible to select sites with those ideal conditions that also characterized the desired reaches and tributary inflows. Some stations selected were the best available option for quantifying a desired stream reach despite having alluvial channel bottoms. Three sites in particular stand out as problematic:

1. The location for measuring the main stem of Barton Creek downstream of the Long Branch confluence was not ideal due to its alluvial bottom, but was the best choice given very deep water immediately upstream and rapids immediately downstream. Long Branch surface flow contributions were impossible to quantify to a greater detail than

estimates due to channel morphology and flow conditions. The confluence with Barton Creek created a large backwater area that made measuring flow challenging in general and impossible using ADV methods on the upstream side. A significant temperature gradient suggested spring contributions in this same area as shown in Events 1 and 2.

2. The Abby tributary joins Barton Creek from the cut bank on river right, but at the time of the study there was a large gravel bar on the opposite bank. Water from Barton Creek could be observed moving through the gravel and cobbles of this deposit. The reach upstream of Abby was calculated as gaining during Event 1 but losing in Events 2 and 3. Rather than recharge to karst features, these "losses" likely indicate that, as creek levels dropped during the drying conditions, a greater proportion of creek discharge was flowing through the gravel bar and could not be measured. This is further supported by the presence of temperature gradients on both sides of Barton Creek near the Abby DS site, observed even after the tributary had gone dry, suggesting groundwater contributions rather than losses.

3. During Event 1, the Chalk Knob tributary was not flowing at the rate anticipated during the planning phase of this study, and the majority of visual flow contributions in the area were from springs along the bank of Barton Creek. Presumably due to inconsistencies in the cross sections of the upstream and downstream sites, Chalk Knob DS was measured as having a nominally lower flow (25.11 cfs) than Chalk Knob US (25.29 cfs) during the first event despite small visual inflows present between the two stations. This discrepancy is within the margin of error and not of great concern, but it does illustrate the inaccuracy that can be introduced by less-than-ideal site conditions. Given the similarity in measurements between the upstream and downstream sites during Event 1, only one of the two sites was measured during subsequent events.

Event 3 Problems and Invalid Data

There were several hurdles to gauging flow during Event 3. The information obtained from this sampling effort is useful in that it supports the coarse conclusion that Barton Creek remains a net gaining stream across Shield Ranch, even under the dry conditions of late summer with reduced spring contributions. However, inconsistencies because of low flow conditions, a minor storm event, and a longer sampling event duration render this data quality too poor to make conclusions about individual segment gains and losses within Shield Ranch.

Discharge in Barton Creek dropped by ~75% from the first event to the third event. Several tributaries were either dry or flow was too low to measure. This impacted data collection in two ways:

1. For all sites with alluvial channel bottoms during Event 3 (most sites), the proportion of flow that could not be detected by ADV methods was higher due to lower flow in the overall system, significantly increasing the inherent error at those sites (e.g. Abby tributary).

2. At some sites, the lower stream level and velocities made it impractical to collect a measurement, requiring the measurement be taken at a different location. For example,

both the East End site and the White Branch DS site were moved during Event 3 due to a high proportion of flow within alluvium rather than at the surface. This means the loss documented for the downstream-most segment is not representative of the same segment characterized in Events 1 and 2. Furthermore, the relocated White Branch DS site had a bedrock channel bottom, meaning nearly all the flow was likely captured by the Flowtracker. Conversely, the relocated East End site had a "solid alluvial bottom" as noted in the field notes, meaning some of the flow captured in the White Branch DS measurement was likely within the alluvium at the new East End site where it could not be detected. This "loss" is most likely more representative of site discrepancies than changes in flow.

Because of reduced staff availability, Event 3 took place over three days rather than the two days taken to collect measurements during Events 1 and 2. In addition to the inherent temporal variability an extra day introduces to the dataset, a small rainfall event occurred on the morning of the second day. Based on the small rise in Barton Creek discharge at Hwy 71 seen on Figure 3, this event increased flow and rendered the measurements collected on July 23rd essentially useless. The error this introduces is most obvious in the false "loss" between Nauman and Long Branch. Nauman was gauged the day of the storm under higher flow conditions while Long Branch was measured the following day when the minor stormflow had largely receded.

Rather than cancelling Event 3 following the rain event, sampling continued due to the impending conclusion of the WPD Internship Program and the opportunity for interns to observe how easily error can distort a dataset. While all data from Event 3 were presented in Table 1, the only conclusion that can reasonably be drawn from the flawed data is that even under much drier conditions than the first two events, Barton Creek remains a net gaining stream across Shield Ranch. We can safely make this determination because (1) the two most upstream sites and two most downstream sites were all measured on the first day of Event 3, making them temporally comparable; and (2) even at the relocated East End site, flow was >25% higher than at the upstream South Fence.

Spring Contributions and Measured Flow Loss

Overall, the results across all three gauging events demonstrate that Barton Creek is a primarily spring-fed, net gaining stream across Shield Ranch. Several springs and seep zones were observed either visually flowing directly into Barton Creek or detected as in-channel temperature gradients.

Groundwater contributions directly to the main stem of Barton Creek provided the majority of flow gains across the ranch in both Events 1 and 2, accounting for up to 66% and 88%, respectively, of inflows with tributaries providing the remainder of the contributions. These figures are likely biased slightly high given that flow in the Long Branch tributary had to be estimated visually due to challenging site conditions and may have been underestimated, but this discrepancy is likely small. The increase in the proportion of main-stem groundwater contributions between Events 1 and 2 is consistent with drying conditions and illustrates the effect of the drop in the water table: as higher elevation springs that feed tributaries went dry, lower elevation springs along the main stem continued to flow.

Furthermore, the positive but statistically insignificant relationship between subwatershed area and percentage of total flow gain during Events 1 and 2 is further evidence that Barton Creek under baseflow conditions is sourced primarily from gravity-fed springs within the unconfined, upper Trinity Aquifer. A stronger relationship between subwatershed area and percent total flow gain would be expected in a system where surface water inputs (e.g. tributary inflows) dominate flow contributions.

The flow losses measured in Barton Creek at Shield Ranch were minor, spatially and temporally inconsistent, and do not imply the presence of significant recharge features. This is in contrast to the substantial losses documented in upper Onion Creek, which indicated a connection to lower units of the Trinity Aquifer (Hunt et al., 2017). In stream segments with minor losses, some creek flow is likely moving downstream through the alluvium and not measurable by methods used in this study.

Conclusions & Implications

All three gauging events demonstrated that, overall, Barton Creek within Shield Ranch is a net-gaining stream. Trinity Aquifer springs are responsible for these gains in both the tributaries and the main stem of the creek. Over the summer, groundwater availability decreased as rainfall decreased over the Trinity Aquifer. As the system dried throughout the summer, declining spring inputs indicated that Trinity Aquifer springs are gravity fed and that the local water table drops seasonally.

The majority of gains were from groundwater contributions along the main stem of Barton Creek rather than tributary inflows. This proportion increased from Event 1 to Event 2 under lower flow conditions, illustrating the drop in the water table as higher elevation springs within tributaries had reduced discharge or went dry while lower elevation springs along the main stem continued to flow.

Losses were minimal and inconsistent both spatially and temporally, indicating shallow alluvial losses rather than the presence of significant recharge features attributable to geological formations.

As the climate continues to change, Central Texas is expected to become generally hotter and drier with precipitation falling in less frequent, more intense events (Nielsen-Gammon et al., 2021), exacerbating the seasonal drop in the water table. Furthermore, rapid population growth and urbanization in the area threaten both water quality and quantity. Preserving native landscapes maintains some of the natural resilience of the system and can help mitigate the impacts of climate change and urbanization to Central Texas streams and aquifers.

Acknowledgements

Special thank you to City of Austin Watershed Protection Internship Program, Shield Ranch, BSEACD, the rest of the Geologic Drainage Systems team (Scott Hiers, Radmon Rice, and David Johns), and many other Watershed staff for field assistance.

References

Braun, C.L. and Grzyb, S.D. 2015. Streamflow gains and losses in the Colorado River in northwestern Bruent and southeastern San Saba Counties, Texas, 2012-14: U.S. Geological Survey Scientific Investigations Report 2015-5098, 32p.

City of Austin (COA). 1997. The Barton Creek report. City of Austin, Drainage Utility Department, Environmental Resources Management Division. Water Quality Report Series COA-ERM/ 1997. April 22, 1997. Austin, Texas.

Gary, M.O.; Gary, R.H.; and Hunt, B.B. 2011, Interconnection of the Trinity (Glen Rose) and Edwards Aquifers along the Balcones Fault Zone and Related Topics. Proceedings: Karst Conservation Initiative Meeting, Feb 17, 2011, Austin, Texas. Proceedings compiled July 2011.

Green, R. T.; Bertetti, F. P.; and Candelario, M. O. 2011. Edwards Aquifer – Upper Glen Rose Aquifer Hydraulic Interaction. *in* Gary, M. O., R. H. Gary, and B. B. Hunt, eds. Proceedings: Karst Conservation Initiative Meeting, Feb 17, 2011, Austin, Texas. Proceedings compiled July 2011.

Hunt, B.B.; Smith, B.A.; Gary, M.O.; Broun, A.S.; Wierman, D.A.; Watson, J.; and Johns, D. 2017. Surface-water and Groundwater Interactions in the Blanco River and Onion Creek Watersheds: Implications for the Trinity and Edwards Aquifers of Central Texas. Bulletin of the South Texas Geological Society, Vol. LVII, Issue 5, Jan 2017, pp. 33-53.

Nielsen-Gammon, J.:Holman, S.; Buley, A.; Jorgensen, S.: Escobedo, J.; Ott, C.; Dedrick, J; Van Fleet, A. 2021. Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036. Office of the Texas State Climatologist, Texas A&M University.

Smith, B. A., B. B. Hunt, A. G. Andrews, J. A. Watson, M. O. Gary, D. A. Wierman, and A. S. Broun, 2014, Hydrologic influences of the Blanco River on the Trinity and Edwards aquifers, Central Texas, USA, *in* B. Andreo, F. Carrasco, J. Duran, P. Jimenez, and J. LaMoreaux, eds., Hydrogeological and environmental investigations in karst systems: Environmental Earth Sciences, v. 1, p. 153–161.

Sontek/YSI Inc. 2007. FlowTracker Handheld ADV Technical Manual, Firmware Version 3.3, Software Version 2.20. San Diego, California. July 2007.

Turnipseed, D.P., and Sauer, V.B., 2010, Discharge measurements at gaging stations: U.S. Geological Survey Techniques and Methods book 3, chap. A8, 87 pp.

Tammy Johnson

From:	PUBCOMMENT-OCC
Sent:	Tuesday, April 1, 2025 3:49 PM
To:	PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject:	FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: kasonjatz@icloud.com <kasonjatz@icloud.com>
Sent: Tuesday, April 1, 2025 3:13 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Jason Katz

EMAIL: kasonjatz@icloud.com

COMPANY:

ADDRESS: 12333 Triple Creek Cir
Dripping Springs, TX 78620

PHONE: 4158280233

FAX:

COMMENTS: I request a contested case hearing for permit WQ0016111001. I live downstream of the proposed property, approximately a mile away. We get 100% of our water to live on from a well. This proposal would significantly impact the quality and quantity of my property's water supply now and for years to come. I dispute TCEQ's assessment of the negative environmental impacts of a venue of this size, located in a rural community with no public water available, no public sewage available and no intention of adding such infrastructure in the near future. The simple amount of people, cars and waste this venue would bring to this area will damage our land in an irreversible manner.

August 15, 2023

REVIEWED
AUG 29 2023 PM
By GCW

Texas Commission on Environmental Quality (TCEQ)

Office of the Chief Clerk MC-105

P.O. Box 13087 Austin, Texas 78711-3087

Re: Opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue

Dear TCEQ Commissioners,

I am writing as a concerned citizen to express my strong opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue. While I reside about a mile from the proposed venue, I believe there are significant environmental risks associated with this project.

The potential impact on Barton Creek, downstream from my residence, is of particular concern. The health of these vital hill country streams and the well-being of local wildlife could be jeopardized by the wastewater discharge from the venue.

Given these environmental concerns, I respectfully request that TCEQ denies the domestic wastewater permit for Blizexas LLC Music Venue. Additionally, I urge the organization of a public meeting to address these pressing issues with local residents and stakeholders.

Thank you for your attention to this matter. I am available for any further discussion or information you may require.

Sincerely,

Jason Katz

12333 Triple Creek Cir

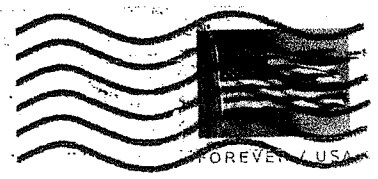
Dripping Springs, TX

78620

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
2023 AUG 28 AM 10:21
CHIEF CLERKS OFFICE

KATZ
12333 TRIPLE CREEK CIR
DRIPPING SPRINGS, TX
78620

OAKLAND CA 945
24 AUG 2023 PM 6 L



RECEIVED
AUG 28 2023
TCEQ MAIL CENTER
WT

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
OFFICE OF THE CHIEF CLERK
MC-105
P O BOX 13087
AUSTIN, TEXAS 78711-3087

78711-308787

RECEIVED
2023 AUG 28 AM 10:31
TCEQ
OFFICE OF CHIEF CLERK

Kimberly Muth

From: PUBCOMMENT-OCC
Sent: Tuesday, August 15, 2023 1:06 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

PM

From: kasonjatz@gmail.com <kasonjatz@gmail.com>
Sent: Tuesday, August 15, 2023 10:57 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Jason Katz

EMAIL: kasonjatz@gmail.com

COMPANY:

ADDRESS: 12333 TRIPLE CREEK CIR
DRIPPING SPRINGS TX 78620-3714

PHONE: 5109223603

FAX:

COMMENTS: August 15, 2023 Texas Commission on Environmental Quality (TCEQ) Office of the Chief Clerk MC-105 P.O. Box 13087 Austin, Texas 78711-3087 Re: Opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue Dear TCEQ Commissioners, I am writing as a concerned citizen to express my strong opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue. I reside about a mile from the proposed venue and I believe there are significant environmental risks associated with this project for the area. The potential impact on Barton Creek, downstream from my residence, is of particular concern. The health of these vital hill country streams and the well-being of local wildlife could be jeopardized by the wastewater discharge from the venue. Given

these environmental concerns, I respectfully request that TCEQ denies the domestic wastewater permit for Blizexas LLC Music Venue. Additionally, I urge the organization of a public meeting to address these pressing issues with local residents and stakeholders. Thank you for your attention to this matter. I am available for any further discussion or information you may require. Sincerely, Jason Katz 12333 Triple Creek Cir Dripping Springs, TX 78620

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Monday, March 31, 2025 9:09 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: kaurajana@gmail.com <kaurajana@gmail.com>
Sent: Sunday, March 30, 2025 3:37 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Jana Kaura

EMAIL: kaurajana@gmail.com

COMPANY:

ADDRESS: 3808 Hidden Hills Dr
Dripping Springs, TX 78620

PHONE: 5129255339

FAX:

COMMENTS: I am requesting a contested case hearing conducted by the State Office of Administrative Hearings that challenges the issuance of the TLAP permit. As a 27 year homeowner 2 miles from this monstrosity, I have attended 2 meetings and have made comments during the meetings. This venue will ruin Barton Creek, it has been stated that Blizexes will be responsible for self reporting any spillage or overflow into the creek, that is like putting the fox out to guard the henhouse. We need to respect our

precious waterways that are left and not allow out of state business to come in and ruin our precious resources for profit.

(14)

TCEQ Registration Form

November 29, 2022

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Jana Kaura

Mailing Address: 3808 Hidden Hills Pl

Physical Address (if different): _____

City/State: DS TX **Zip:** 78620

This information is subject to public disclosure under the Texas Public Information Act

Email: Kaura.jana@gmail.com

Phone Number: (512) 925-5339

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☑ No

  If yes, which one? _____

☐ **Please add me to the mailing list.**

☑ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Friday, March 28, 2025 5:42 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-APD
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: bryankelley@fastmail.com <bryankelley@fastmail.com>
Sent: Friday, March 28, 2025 5:34 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Bryan Kelley

EMAIL: bryankelley@fastmail.com

COMPANY:

ADDRESS: 100 Twin Creek Circle
Dripping Springs, TX 78620

PHONE: 8186741998

FAX:

COMMENTS: I'd like to request a contested case hearing. Thanks!

TCEQ Registration Form
January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: BRYAN KELLEY

Mailing Address: 100 TWIN CREEK CIRCLE

Physical Address (if different): _____

City/State: DRIPPING SPRINGS **Zip:** 78620

This information is subject to public disclosure under the Texas Public Information Act

Email: BRYAN.KELLEY@TASTMASC.COM

Phone Number: (818) 674-1998

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☑ No

  If yes, which one? _____

☑ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☑ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

To Whom It May Concern,

I'm Concerned with Pollution/Litter Due to Storm Water Runoff. Additionally, I'm Concerned with the Current Drought, and the Water it's Going to Take to Make the Venue Functionable. Lastly, I'm Concerned with Pollution into the Barton Creek Conservancy, and the Effects the Venue Will Have on our Local Aquifer.

Thanks,

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

P.S. I'm Also Concerned About the Runoff of any Pesticides/Herbicides that Occur During any Potential Storm or Other Event that Creates Impact on the Venue Grounds. Thanks!

(21)

TCEQ Public Meeting Form

PLEASE PRINT

Name: BRYAN KELLEY

Mailing Address: 15279 FM 150 W DRIFTWOOD 78619

Physical Address (if different): _____

City/State: _____ **Zip:** _____

Email: BRYANKELLEY@FASTMAIL.COM

E-mail addresses are subject to public disclosure under the Texas Public Information Act

Phone Number: (818) 674-1998

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☑ No

  If yes, which one? _____

☑ **Please add me to the mailing list.**

☑ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☑ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Monday, March 31, 2025 8:34 AM
To: PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Cc: PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: phaedra.kelley@gmail.com <phaedra.kelley@gmail.com>
Sent: Friday, March 28, 2025 11:49 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Phaedra Kelley

EMAIL: phaedra.kelley@gmail.com

COMPANY:

ADDRESS: 100 Twin Creek Circle
Dripping Springs, TX 78620

PHONE: 8189328855

FAX:

COMMENTS: I would very strongly like to request a contested hearing.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 30, 2024 12:41 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: tomkessleratx@gmail.com <tomkessleratx@gmail.com>
Sent: Monday, January 29, 2024 6:36 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Thomas Kessler

EMAIL: tomkessleratx@gmail.com

COMPANY:

ADDRESS: 312 SUNDOWN RDG
AUSTIN TX 78737-9596

PHONE: 9729748156

FAX:

COMMENTS: Comments on Blizexas TLAP Permit WQ0016111001 In response to TCEQ Notice of Public Meeting issued on 12/15/2023 My house is at 312 Sundown Ridge, Austin, TX 78737, approximately 2 miles from the proposed concert venue treatment facility. When this venue is active, I will be able to both see and hear the noise and light pollution from the hilltop location of my house, and it is quite possible that it will affect aquifer levels that would result in my well going dry. I write to state my objections to the proposed TLAP Permit No. WQ0016111001 to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersections of Crumley Ranch Road, Trautwein Road, and Fitzhugh Road in Hays County, Texas. Its disposal area is located in the Edwards Aquifer Contributing Zone above Barton Creek. I have concerns about the Draft Permit of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001, including the impacts of disposal and runoff on: Groundwater and surface water contamination; Impact on local wildlife Impact on aquifers, and Waste odors. Disposal and runoff I have grave concerns about the elevations of the proposed site, which is directly uphill from Barton Creek where it intersects with Fitzhugh Road. The difference in elevation from the treatment facility to Barton Creek is over 140 feet, almost all downhill. In addition, the properties to the north of the proposed site are also downhill and will almost certainly be affected by runoff. Other irrigation fields in the area have experienced numerous problems, including: Poor soils unable to absorb large amounts of water; Runoff of effluent from saturated irrigation fields; and Insufficient storage capacity to store effluent when soils are saturated – i.e. 3 days of storage noted in draft permit may not be sufficient for the location, especially in situations such as the recent heavy rains for many days at a time. A number of similarly-permitted facilities in Hays County have occasionally failed, often resultings in untreated wastewater flowing into local streams. I am aware of a number of cases where sanitation at music venues became overwhelmed in wet weather, in some cases causing a spread of disease. What safeguards can be put in place to ensure that this can't occur? Surface water I am concerned about the potential impact of the site's operations and the proposed land application of wastewater next to Barton Creek and the waters running into Barton Creek. The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life. What plans are in place to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on Barton Creek, especially given that Barton Creek is almost directly downhill of the site? I have concerns about the amount of wastewater that will be generated at the venue. There is limited information about the number of concerts per week to be held at Rockingwall. It seems that information must be made available to determine critical technical details accurately. The occupancy/capacity of the venue is also critical to know. I have concerns about runoff, locations of the drip fields, and size of the property relative to the requirements to properly manage the TLAP permit. Blizexas should be required to disclose planned locations for parking lots and total amount of impervious cover from all impervious surfaces to ensure that engineering assumptions are correct under the draft permit. Has TCEQ conducted a site visit to determine if the property is large enough to accommodate all requirements? If not, what is TCEQ's basis for believing that the proposed TLAP facility will not harm Barton Creek or adjacent properties? Groundwater I have concerns regarding the placement of waste within the Edwards Aquifer Contributing Zone. Blizexas has announced plans to pump up to 12,000 gallons per day from a well on the site of this property, to operate the wastewater treatment system. The aquifers in this area are already very overtaxed, and the Middle Trinity aquifer has no active recharge zone. If this well taps into the middle Trinity (which provides water for my property), then it will up this ancient water very quickly. Regardless of which aquifer supplies the well, it has a very high potential to cause the wells in the area to go dry very quickly, which is already a big problem in this area. The thin soil characteristic of the disposal area poses a potential risk to not only the Edwards Aquifer but also the Trinity Aquifer, as many neighboring property owners rely on the Trinity as their sole source of water for domestic and commercial use. The soil in the proposed treatment system is very thin, usually less than 1 foot above the limestone bedrock in the area. Therefore it has little to no capacity to absorb the 12,000 gallons of effluent being produced daily by the wastewater facility. It seems that a proposed groundwater well is identified in the application. What is the capacity of the well? Is the well currently permitted with the Hays Trinity Groundwater Conservation District? Is there enough potential water production to maintain grass production as required under the TLAP permit? And is this enough water for fire-control purposes? Another possible source of water to run the wastewater facility proposed by Blizexas is to truck in 12,000 gallons of water per day, This works out to 50 tons of water per day being carried over the substandard roads leading to the proposed venue, and has the potential to severely damage these roads and bridges in a short period of time. As the road damage increases, this will likely limit the ability to supply enough water using this method, and the wastewater system will likely become inoperable as a result. I request that Blizexas be required to submit an Edwards Aquifer Contributing Zone plan, if it hasn't already done so. Odor Blizexas only proposes buffer zones for odor control 150 feet

from the property line. Can TCEQ ensure that Blizexas's sludge solids management plan is sufficient to protect neighboring properties from odors from the wastewater system? Also, is there adequate capacity for Wastewater Residuals Management to handle offsite disposal under their current permit? Wildlife The plans for the proposed facility show an amphitheater with the stage facing north within a few hundred feet of Shield Ranch, which is a well-known wildlife conservation area. The noise from amplified hip-hop and rock music for multiple nights each week will almost certainly drive the wildlife away from this area and prevent their return. While this is not directly related to the wastewater treatment system, it is certainly a huge factor in the Environmental Quality of the area, and should be considered by the Commission on Environmental Quality, as a significant reduction in wildlife will most definitely result in multiple environmental impacts. In addition, the powerful public address system used for such concerts will result in considerable noise pollution throughout the area, especially up and down the valley surrounding nearby Barton Creek. Contested Hearing If this application is indeed approved by the TCEQ, then I am requesting a contested hearing as a result.

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Barbara + Tom Kessler

Mailing Address: 312 Sundown Ridge, Austin, TX 78737

Physical Address (if different): _____

City/State: Austin **Zip:** 78737

This information is subject to public disclosure under the Texas Public Information Act

Email: bobbiKessler@gmail.com

Phone Number: (972) 974-8156

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☒ No

  If yes, which one? Homeowner

☐ **Please add me to the mailing list.**

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☒ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

This venue is entirely outsized and inappropriate for this site. It will bury us in toxic wastewater, which will implode the ecosystem. Already, the applicant has put forth questionable plans around handling wastewater and has not been transparent, putting the community at risk. TCEQ seems willing to assume →

Please give this form to the person at the information table. Thank you.

all of the applicant's estimations & science are correct and seems to have done only minimal independent investigation. There's too little regard in this process for the delicate groundwater situation in this part of the Hill Country.

(- around effluent, soil, containment etc.

Misty Botello

From: PUBCOMMENT-OCC
Sent: Thursday, August 24, 2023 11:53 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

PM

From: tomkessleratx@gmail.com <tomkessleratx@gmail.com>
Sent: Thursday, August 24, 2023 11:49 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Thomas Kessler

EMAIL: tomkessleratx@gmail.com

COMPANY:

ADDRESS: 312 SUNDOWN RDG
AUSTIN TX 78737-9596

PHONE: 9729748156

FAX:

COMMENTS: August 24, 2023 To Texas Commission on Environmental Quality: My name is Thomas Kessler and my wife, Barbara, and I am requesting that TCEQ deny the permit for the proposed Blizexas LLC Music Venue. I live at 312 Sundown Ridge, Austin, TX, approximately one and a half miles from the proposed location. These comments pertain to domestic wastewater Permit No. WQ0016111001 filed by Blizexas, LLC. We are requesting a public meeting on the application. As you are aware, our area is greatly stressed by the ongoing effects of extreme heat and drought conditions. This planned venue represents a tremendous danger to our already fragile area. It will adversely impact the Trinity aquifer, the primary drinking water supply for thousands of Central Texans. Wastewater runoff from the site also

has the potential to impact pristine hill country streams. The water resources required for this project will further strain our limited supply as we see area wells going dry. In addition to our human neighbors, the wildlife in the area is already struggling and will be greatly harmed by the presence of a development of this size in a challenged ecosystem. We are asking the TCEQ to intervene on behalf of the community to prevent the widespread environmental degradation if this project is approved. Your attention to the serious issues in this matter is appreciated. Thomas and Barbara Kessler 312 Sundown Ridge Austin, TX, 78737 tomkessleratx@gmail.com 972 974-8156

Debbie Zachary

From:	PUBCOMMENT-OCC
Sent:	Friday, November 18, 2022 3:00 PM
To:	PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject:	FW: Public comment on Permit Number WQ0016111001

From: tomkessleratx@gmail.com <tomkessleratx@gmail.com>
Sent: Thursday, November 17, 2022 5:30 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Tom Kessler

EMAIL: tomkessleratx@gmail.com

COMPANY:

ADDRESS: 312 SUNDOWN RDG
AUSTIN TX 78737-9596

PHONE: 9729748156

FAX:

COMMENTS: As a landowner near this proposed amphitheater, I am greatly concerned about its potential impact on the Barton Creek watershed. The many homeowners and business owners in this region count on Barton Creek and the watershed for our well-being. It is disconcerting that a California company would create this plan without fully understanding how it will negatively affect the many local businesses that will be disrupted by damaging runoff into

Barton Creek. I urge you to stop this degradation to one of our most important natural resources. The location and plans for this facility could not be more inappropriate.

Misty Botello

From: PUBCOMMENT-OCC
Sent: Tuesday, September 5, 2023 11:01 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

RFR
PM

From: bunnyhouse.mk@gmail.com <bunnyhouse.mk@gmail.com>
Sent: Saturday, September 2, 2023 4:17 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Anna Konvit

EMAIL: bunnyhouse.mk@gmail.com

COMPANY:

ADDRESS: 11807 OAK KNOLL DR
AUSTIN TX 78759-3806

PHONE: 5127443761

FAX:

COMMENTS: As an Austin resident, I would appreciate ya'll supporting local culture and people who know their town into continue to navigate the local economy. It's is the Austinites who have made Austin profitable and worth visiting. Having a California company coming in to purchase land and evade standards for our quality of living is not going to help Austin succeed in the long run. My children play in the watersheds and their plan to release wastewater into the watershed will drastically alter that reality. Please reconsider this and hold a public meeting so that others can voice their opinions before moving forward.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 18, 2024 11:32 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: Formulaperformance@outlook.com <Formulaperformance@outlook.com>
Sent: Wednesday, January 17, 2024 7:59 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Daniel Lopez

EMAIL: Formulaperformance@outlook.com

COMPANY:

ADDRESS: 11914 FITZHUGH CORS
DRIPPING SPRINGS TX 78620-5018

PHONE: 5127490962

FAX:

COMMENTS: We need a contested case hearing!

Misty Botello

From: PUBCOMMENT-OCC
Sent: Tuesday, August 22, 2023 8:54 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

From: formulaperformance@outlook.com <formulaperformance@outlook.com>
Sent: Tuesday, August 22, 2023 12:12 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Daniel Lopez

EMAIL: formulaperformance@outlook.com

COMPANY:

ADDRESS: 11914 FITZHUGH CORS
DRIPPING SPRINGS TX 78620-5018

PHONE: 5127490962

FAX:

COMMENTS: We do not need them discharging all this poop soup into our rivers! Even if it's treated! It needs a better location!

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 18, 2024 11:34 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: txschnecke@gmail.com <txschnecke@gmail.com>
Sent: Thursday, January 18, 2024 4:40 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Johanna Mailer

EMAIL: txschnecke@gmail.com

COMPANY:

ADDRESS: 1201 DEER CREEK CIR
DRIPPING SPRINGS TX 78620-3015

PHONE: 2544585607

FAX:

COMMENTS: I request a contested case hearing

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 18, 2024 11:33 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: Femelabs@gmail.com <Femelabs@gmail.com>
Sent: Wednesday, January 17, 2024 9:55 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Trisha Markey

EMAIL: Femelabs@gmail.com

COMPANY:

ADDRESS: 11706 crumley ranch road
Dripping springs TX 78620

PHONE: 5129570098

FAX:

COMMENTS: I own multiple properties that will be affected by this venue and their runoff, one is within 1/4 mile. I would like a contested hearing.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 30, 2024 12:58 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: michaela.mccown@gmail.com <michaela.mccown@gmail.com>
Sent: Monday, January 29, 2024 7:23 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MS Michaela McCown

EMAIL: michaela.mccown@gmail.com

COMPANY:

ADDRESS: 19300 HAMILTON POOL RD
DRIPPING SPRINGS TX 78620-2816

PHONE: 2543009620

FAX:

COMMENTS: I would like to request a contested case hearing for this wastewater permit. Stormwater and wastewater runoff will impact the Barton Creek Watershed, which includes endangered species habitat and is an important water supply for wildlife & humans. With climate change impacts, more intense storms like what happened two weeks ago are more likely, and with the large amount of impervious cover on the site, this will result in unauthorized discharges to the Barton Creek Watershed. This will impact both surface and groundwater resources.

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Michaela McCown on behalf of Michael Murphy

Mailing Address: 19300 Hamilton Pool Rd

Physical Address (if different):

City/State: Dripping Springs **Zip:** 78620

This information is subject to public disclosure under the Texas Public Information Act

Email: michaela.mccown@gmail.com

Phone Number: (512) 786-8726

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☒ No

  If yes, which one?

☐ **Please add me to the mailing list.**

☒ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Friday, January 19, 2024 9:51 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: TCEQ_2 comments2.docx

H

From: steve.mccreary@gmail.com <steve.mccreary@gmail.com>
Sent: Thursday, January 18, 2024 7:02 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Steve McCreary

EMAIL: steve.mccreary@gmail.com

COMPANY:

ADDRESS: 251 CROSSROADS DR
DRIPPING SPRINGS TX 78620-3160

PHONE: 5124226567

FAX:

COMMENTS: |I oppose the granting of this permit for the reasons expressed in the attached document.

My name is Steve McCreary and I own and have lived at 251 Crossroads Dr. in Dripping Springs, Texas as my primary residence for over twenty five years. My property is within 3 miles of the proposed development. I also own a well that is within 3 miles of the proposed development. I would like to request a contested case hearing for the wastewater permit for the proposed development, as I have multiple concerns regarding the proposed development and the negative impacts it will have.

The wastewater treatment plant would service a proposed 5000-seat amphitheater, the Fitzhugh Road Concert Venue. The treatment facility and disposal site would be located approximately 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road, in Hays County, Texas 78737. The proposed wastewater treatment facility and disposal site would be located in the drainage basin of Barton Creek in Segment No. 1430 of the Colorado River Basin, approximately 1/2 mile from Barton Creek. The proposed development site is located within the Edwards Aquifer Contributing Zone (EACZ).

I have serious concerns regarding the permit application, relating to the degradation of Barton Creek, the Edwards Aquifer, and area water wells that will likely occur with the irrigation of treated sewage and wastewater/stormwater runoff at the proposed site. I therefore recommend that the Fitzhugh Road Concert Venue wastewater permit be denied, for the reasons presented in these comments.

Under the federal Clean Water Act, TCEQ is charged with maintaining the quality of our state's waters and protecting their existing uses. The Fitzhugh Road Concert Music Venue, as currently proposed, would likely degrade Barton Creek and local groundwater quality in violation of the Clean Water Act and state law through treated sewage and stormwater runoff.

The draft wastewater permit issued by TCEQ does not require Nitrogen or Phosphorous removal and is extremely lax, especially given the environmentally-sensitive nature of the area within the EACZ. Nitrogen and Phosphorous are known to cause eutrophication of waterways, which threatens aquatic life. Barton Creek is already under nutrient stress in this area, with significant eutrophication present, especially during warm weather months.

Barton Creek, ½ mile from the proposed development site already suffers from eutrophication.

The draft permit limits of 20 mg/l for both Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) are also very lax and would result in pollution of Barton Creek during saturation/runoff conditions. Most wastewater permits currently being issued in close proximity to a waterway within the EACZ stipulate a maximum limit of 5 mg/l for both TSS and BOD, even on TLAP permits issued for locations not as environmentally-sensitive as where the Fitzhugh Road Concert Venue would be located, such as the nearby Headwaters development TLAP 1 .

The effluent concentration levels in the final Headwaters TLAP permit are 5 mg/l BOD, 5 mg/l TSS, 2 mg/l ammonia-nitrogen (NH 3 -N), and 1 mg/l for total phosphorus (TP), which is far more stringent than the effluent levels concentrations being proposed for the Fitzhugh Road Concert Venue TLAP draft permit. Further, the Fitzhugh Road Concert Venue TLAP draft permit also has no requirement for E. coli testing/limits, which needs to be added to the draft permit to protect public safety.

Aside from concerns over pollutant limits, the layout of the proposed Fitzhugh Road Concert Venue itself is also problematic from a wastewater standpoint. The developer has proposed 6 relatively small (roughly ½ acre each) effluent drip fields comprising a total of 2.75 acres. Each TLAP field would be surrounded by impervious cover (Fig. 2). This means that even light precipitation would cause runoff of wastewater that could threaten not only Barton Creek but surrounding properties as well.

While the draft Fitzhugh Road Concert Venue wastewater permit is concerning, perhaps an even bigger environmental issue is the high amount of impervious cover the developer has proposed, 66.45%. A heavily paved development with high impervious cover such as what is proposed would be more typical in an urban setting than in a rural area with an important contributing stream (Barton Creek) nearby.

Fitzhugh Road Concert Venue's area is mostly impervious parking spaces, asphalt driveways, and concrete. The high amount of impervious cover poses a threat to both groundwater and surface water quality and is inconsistent with current land uses in this rural area of Hays County. The City of Austin Extra Territorial

Jurisdiction (ETJ), which is located less than a mile from the proposed development site, follows the Save Our Springs (SOS) Ordinance, which stipulates maximum impervious cover limits of 20% in the EACZ. The Dripping Springs ETJ, also located less than a mile from the proposed development site, places a 35% impervious cover restriction in the EACZ. These limits are in place not only to protect nearby Barton Creek, but also to protect the Edwards Aquifer and Trinity Aquifer that supply drinking water to area well-owners, residents and businesses. There is no other reliable source of drinking water in this area besides groundwater.

While the impervious cover percent is certainly too high for this area, the type of impervious cover is even more troubling. Most of the impervious cover is allocated for the 1,823 parking spaces in the proposed sprawling parking lot. These parking spaces would be subject to auto pollutants leaking from parked vehicles; pollutants including engine oil, gasoline, power steering fluid, brake fluid, heavy metals from car batteries, and tar-based sealants that protect parking lots and asphalt driveways. The applicant also plans to construct asphalt driveways, fire access roads, and turn lanes into and out of the venue. We are troubled by the extensive use of asphalt, a material known to impair water quality, as part of the developer's plan.

The potential construction phase of this project is also of great concern, especially given the 150-foot elevation difference between the development site and nearby Barton Creek, just ½ mile away and down slope. There are legitimate concerns that the temporary erosion and sedimentation control facilities proposed by the developer will not be adequate to prevent pollution of Barton Creek during the construction phase. The addition of turn lanes on Fitzhugh Road, while certainly necessary for a development of this size, will just add more construction debris and impervious cover to a development that exceeds impervious cover limits enforced by the contiguous cities of Austin and Dripping Springs.

Once construction is completed, the developer proposes two batch detention ponds as the sole means of maintaining water quality for this development. Batch detention ponds can be effective for removing TSS; however, they are less effective at removing fluid pollutants such as oil and gasoline and wastewater nutrients such as Nitrogen and Phosphorous that may not be absorbed within a

land application irrigation field. Further, these batch detention ponds would also require significant maintenance for a 5000-seat concert venue, that is regularly hosting concert events, due to the excessive amounts of trash and floatable debris generated during these events. If these batch detention ponds aren't properly maintained, solid pollutants in addition to fluid pollutants could find their way into Barton Creek and local groundwater. During the past twenty years, there have been numerous stormwater detention plans that were never fully implemented or that failed to function properly coupled with a failure on the part of county and state oversight to make sure approved plans were adhered to and functional through follow-up inspections. Given the budgetary and staff shortages these days, I would urge caution in approving high maintenance plans such as this one.

Taken together, the individual wastewater concerns and stormwater concerns combine to create a synergistic, polluting mess; saturated TLAP fields would result from the fact that the developer is proposing the absolute minimum irrigation area to meet TCEQ requirements (2.75 acres), with no "buffer" area allocated. On top of this, the soil in this part of Central Texas is thin and predominantly clay, the least absorbent soil type. As soon as the 6 proposed TLAP fields become saturated, they would in effect become additional impervious cover, increasing

the impervious cover percentage from 66.45% to 75%. Even with light rainfall, the saturated TLAP fields would combine their wastewater runoff with stormwater runoff from the parking lot, driveways, concrete venue itself, and other impervious surfaces. This combined flow is supposed to be collected by just two batch detention ponds.

The property consists of three separate drainage basins, shown as E1, E2, and E3.

The locations of the proposed batch detention ponds are supposed to collect the combined wastewater/stormwater runoff. Basin E1 drains approximately 30% of its area to the left of the first detention pond, sending runoff downhill to Barton Creek. Basin E2 has flow from left to right but also from top to bottom of the diagram; these competing directions will combine basin flow into one stream, much of which will likely miss the second batch detention pond. Lastly, the third basin (E3) has no batch detention pond to collect runoff, assuring that this runoff from Basin E3 will also end up in Barton Creek. I believe that roughly half of the

combined wastewater/stormwater runoff would miss the two batch detention ponds and wind up in Barton Creek. Because the entire development is in the Barton Creek watershed, there's nowhere else for the runoff that misses the batch detention ponds to go. Given the location and size of the batch detention ponds, roughly half of the runoff will miss these ponds and wind up in Barton Creek. I assume that between the large 5000-seat amphitheater, the necessary driveways, and the 1,823 parking spaces, there simply isn't any additional room for larger batch detention ponds or more detention ponds. But this is a terrible reason to justify polluting Barton Creek and surrounding properties.

In summary, a 5000-seat amphitheater and all of the wastewater and stormwater it would generate is ill-suited for the environmentally-sensitive nature of the Fitzhugh area. Existing development in this area respects the proximity to Barton Creek and location over the EACZ and consists predominantly of single-family homes on one acre plus lots, with On-Site Septic Facilities (OSSFs) for wastewater. Dropping in a massive amphitheater with 2/3 impervious cover and undersized TLAP fields is not only incongruous with the existing area's aesthetic but will likely lead to significant surface water and groundwater contamination. I urge TCEQ to reject the Blizexas, LLC wastewater permit application in its entirety.

Thank you for the opportunity to submit these comments.

Respectfully,

Steve McCreary

14

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Steve McCreary

Mailing Address: 251 Crossroads Dr. DS, TX 78620

Physical Address (if different): _____

City/State: DS TX **Zip:** 78620

This information is subject to public disclosure under the Texas Public Information Act

Email: steve-mccreary@gmail.com

Phone Number: ( )

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☑ No

  If yes, which one? _____

☑ **Please add me to the mailing list.**

☑ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Comments to TCEQ re: Blizexas LLC Music Venue

REVIEWED
AUG 22 2023
BY

To Whom It May Concern,

My name is Steve McCreary and I ask that the TCEQ deny the permit application for the proposed Blizexas, LLC music venue.

I live approximately three miles from the site, but travel the Fitzhugh corridor daily and have done so for twenty-five years.

I am providing comments on the domestic wastewater **Permit No. WQ0016111001** filed by Blizexas, LLC and am requesting a public meeting on this application. Approving this permit will create the alarming potential of wastewater runoff into Barton Creek and into Barton Springs, impacting wildlife, including endangered species, and recreation. The springs and creeks in Hays and Travis Counties are already suffering. I do not believe that the soil or vegetation on the site would be able to absorb the nutrients in the domestic wastewater, creating algae growth in Barton Creek, which is directly downhill from the site. I have dug many holes in the hill country and do not believe that the geology in this area would allow for a successful subsurface drip irrigation septic system, of the planned size, and would cause runoff after a heavy rain. We have a well drawing water from the middle Trinity Aquifer and had to drop our pump to the bottom of the well in 2011. It has been a great concern to us ever since, so we conserve as much water as possible. Drilling a deeper well is not feasible in our situation. I can't imagine allowing the amount of water that is being requested at an entertainment venue for flushing toilets, washing hands and washing dishes among other uses.

Please consider the many harmful outcomes that approving this permit would create and deny it. I do not believe it would be in the best interest of any Hays or Travis county resident. There will be a competing venue that is eight or nine miles away opening in 2024.

Thank you.

Steve McCreary

Steve McCreary
251 Crossroads Dr. Dripping Springs, TX 78620 steve.mccreary@gmail.com 512.422.6567 8/18/2023

CHIEF CLERKS OFFICE
2023 AUG 21 AM 10:07
ON BEHALF OF

McCreary
251 Crossroads Dr.
Dripping Springs, TX 78620

AUSTIN TX 786
RIO GRANDE DISTRICT
19 AUG 2023 PM 3 L

RECEIVED
AUG 21 2023
TCEQ MAIL CENTER
AJ

Texas Commission on Environmental Quality
Office of the Chief Clerk
MC 105
PO Box 13087
Austin, TX 78711-3087

78711-308787

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Monday, November 28, 2022 2:35 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Rockingwall Venue4.pdf

From: steve.mccreary@gmail.com <steve.mccreary@gmail.com>
Sent: Monday, November 28, 2022 12:32 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Steve McCreary

EMAIL: steve.mccreary@gmail.com

COMPANY:

ADDRESS: 251 CROSSROADS DR
DRIPPING SPRINGS TX 78620-3160

PHONE: 5124226567

FAX:

COMMENTS: I am writing to oppose TCEQ Permit WQ0016111001

- I live at 251 Crossroads Dr, near RR12 and Fitzhugh Rd. While not adjacent to the site, it is less that three miles and only a few minutes away. I travel Fitzhugh Rd. twice daily and have for 24 years. Traffic aside, can you imagine trying to get an emergency vehicle anywhere near the area when Fitzhugh Rd, Trautwein Rd, Crumley Ranch Rd, Ranch Road 12, Hamilton Pool Rd and Highway 290 are clogged numerous times a month? Three of these access/egress roads have low water crossings!

- I write to state my objections to the proposed TLAP Permit No. WQ0016111001 to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road in Hays County, Texas, 78737. Its disposal area is located in the Edwards Aquifer Contributing Zone near Barton Creek.

- I have concerns about the Draft Permit of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001, including the impacts of disposal and runoff on:
    - Groundwater and surface water contamination; and
    - Waste odors.

Disposal and runoff

- Other irrigation fields in the area have experienced numerous problems, including:
    - Poor soils unable to absorb large amounts of water;
    - Runoff of effluent from saturated irrigation fields; and
    - Insufficient storage capacity to store effluent when soils are saturated – i.e. 3 days of storage noted in draft permit may not be sufficient for the location.

Surface water

- I am concerned about the potential impact of the site's operations and the proposed land application of wastewater next to Barton Creek and the waters running into Barton Creek.

    - The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life.
    - What plans are in place to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on Barton Creek?

- I have concerns about the amount of wastewater that will be generated at the venue. There is limited information about the number of concerts per week to be held at Rockingwall. It seems that information must be made available to determine critical technical details accurately.

- I have concerns about runoff, locations of the drip fields, and size of the property relative to the requirements to properly manage the TLAP permit.

    - Rockingwall should be required to disclose planned locations for parking lots and total amount of impervious cover from all impervious surfaces to ensure that engineering assumptions are correct under the draft permit.
    - Has TCEQ conducted a site visit to determine if the property is large enough to accommodate all requirements? If not, what is TCEQ's basis for believing that the proposed TLAP facility will not harm Barton Creek or adjacent properties?

Groundwater

- I have concerns regarding the placement of waste within the Edwards Aquifer Contributing Zone.

    - The thin soil characteristic of the disposal area poses a potential risk to not only the Edwards Aquifer but also the Trinity Aquifer, as many neighboring property owners rely on the Trinity as their sole source of water for domestic and commercial use.
    - I request that the Rockingwall amphitheater submit an Edwards Aquifer Contributing Zone plan, if it hasn't already done so.
    - It seems that a proposed groundwater well is identified in the application. What is the capacity of the well? Is the well currently permitted with the Hays Trinity Groundwater Conservation District? Is there enough potential water production to maintain grass production as required under the TLAP permit?

Odor

- Rockingwall only proposes buffer zones for odor control 150 feet from the property line. Can TCEQ ensure that Rockingwall's sludge solids management plan is sufficient to protect neighboring properties from odors from the wastewater system? Also, is there adequate capacity for Wastewater Residuals Management to handle offsite disposal under their current permit?

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Wednesday, March 26, 2025 3:39 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: aesmiller@sbcglobal.net <aesmiller@sbcglobal.net>
Sent: Wednesday, March 26, 2025 3:33 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Anne Smith Miller

EMAIL: aesmiller@sbcglobal.net

COMPANY:

ADDRESS: 4404 Bellvue Ave
Austin, TX 78756

PHONE: 5124528729

FAX:

COMMENTS: We would like to request a contested case hearing for this permit.

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Tuesday, November 29, 2022 8:14 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: aesmiller@sbcglobal.net <aesmiller@sbcglobal.net>
Sent: Monday, November 28, 2022 6:59 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Anne Miller

EMAIL: aesmiller@sbcglobal.net

COMPANY:

ADDRESS: 4404 BELLVUE AVE
AUSTIN TX 78756-3419

PHONE: 5124528729

FAX:

COMMENTS: Please do not approve the wastewater permit for the Rockingwall Amphitheater. It's located too close to Barton Creek, one of the few remaining pristine streams in Central Texas. Wastewater contains nutrients that may result in algae growth in Barton Creek. Excess algae would impair the appearance, recreational value, and overall water quality of Barton Creek, which is relied upon by wildlife and Austinites. Sewage discharge plants in the Hill Country frequently

exceed established pollutant limits. If the sewage discharge from the requested plant exceeded pollutant limits, it could result in detrimental impacts to Barton Creek.

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Monday, March 31, 2025 9:26 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: SGMUNNS@GMAIL.COM <SGMUNNS@GMAIL.COM>
Sent: Sunday, March 30, 2025 6:42 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Susan Munns

EMAIL: SGMUNNS@GMAIL.COM

COMPANY:

ADDRESS: 14909 Fitzhugh Rd Unit D UNIT D UNIT D
Austin, TX 78736

PHONE: 5126369423

FAX:

COMMENTS: Sue & Thomas Munns 14909 D Fitzhugh Road Austin, Texas 78736-6300 sgmunns@gmail.com 512-636-9423 March 26, 2025 Office of the Chief Clerk, MC 105 Texas Commission on Environmental Quality P.O. Box 13087 Austin, Texas 78711-3087 RE: Contested Case Hearing Request for Domestic Wastewater Permit No. WQ0016111001 filed by Blizexas, LLC To the Office of the Chief Clerk: My name is Sue Munns, and I reside on Fitzhugh Road in Hays County. My

husband, Thomas, and I have lived here for over 26 years. We are submitting these supplemental comments to express our ongoing concerns regarding the Domestic Wastewater Permit No. WQ0016111001 filed by Blizexas, LLC and to formally request a contested case hearing on this matter. Proximity and Environmental Impact Our home is located directly across Fitzhugh Road from the proposed wastewater discharge site. Additionally, the elevation of our home is 80' below the street level down a long driveway. We are deeply concerned that the permit, if granted, will negatively impact the environment-including pristine streams, native wildlife and the overall ecosystem of our property. It is reasonable to assume that any runoff from Blizexas will run down our driveway to us and contain oily residue and gasoline/diesel as well as potential biohazards from their onsite sewage plant. Our property contains springs fed pools year-round. Those pools are source of life for wildlife and keep erosion at bay supporting trees/native shrubs and grasses. Downstream from the springs in our yard is a wet weather pond that has been a source of water for local as well as migratory birds and other species. The water then flows directly to Barton Creek. Threats to Water Quality Drainage from the proposed site flows directly into the Barton Creek watershed-an environmentally sensitive and protected ecosystem. Wastewater discharge into this watershed could introduce excess nutrients such as nitrogen and phosphorus, leading to algae blooms, degraded water quality, and harm to aquatic and terrestrial species. Contaminated water could also pose risks to livestock and wildlife that depend on the natural streams. Given these potential impacts, we urge the TCEQ to impose stringent effluent limits consistent with those used to protect other sensitive areas: • Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) should not exceed 5 mg/L, • Ammonia-Nitrogen should not exceed 2 mg/L, and • Phosphorus should not exceed 1 mg/L. Stormwater Runoff from Impervious Cover The proposed development includes a large parking lot covering more than 60% of the site with impervious material. This will significantly increase stormwater runoff, which must be addressed in the TLAP permit. The application fails to identity measures to prevent stormwater from transporting contaminants-such as oil, grease and heavy metals into Barton Creek and over the road to potentially run down my driveway. The proposed wastewater system does not appear designed to handle runoff during heavy rain events. A recent four day storm dropped nearly four inches of rain in our area, causing widespread runoff. Without adequate controls, such events could overwhelm the system and lead to pollution of the surrounding areas. Request for Contested Case Hearing Given the substantial environmental and public health concerns outlined above, we formally request a contested case hearing on this matter. The permit application raises numerous critical issues that require further expert review including: • Inadequate characterization of site geology, • Vulnerability of the Trinity and Edwards Aquifers, • Potential introduction of pollutants into the Barton Creek watershed and, • Absence of a comprehensive stormwater management plan. These deficiencies present serious risks on long-term harm to the environment and to public drinking water supplies. While we are not opposed to responsible growth, we believe that this type of development is inappropriate for this sensitive area of Hays County. We respectfully urge the Texas Commission on Environmental Quality to grant our request for a contested case hearing and take all necessary steps to protect our land, water and wildlife. Sincerely, Sue and Thomas Munns 14909 D Fitzhugh Road Austin, Texas 78736-6300 sgmunns@gmail.com 512-636-9423

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 1:51 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: sgmunns@gmail.com <sgmunns@gmail.com>
Sent: Monday, January 29, 2024 8:09 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Sue Munns

EMAIL: sgmunns@gmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD D
AUSTIN TX 78736-6300

PHONE: 5126369423

FAX:

COMMENTS: TCEQ - The proposed Rockingwall Ranch/ Blizexas project on Fitzhugh is immediately across from our home of 26+ years. There are few residential properties located closer. Our property and home are down hill from the site - it is reasonable to assume that any type of runoff from Blizexas runs onto us. It is unimaginable to responsible local residents - or anyone who observes the magnitude of destruction of nature being planned - that this project will be allowed to move forward. Blizexas' massive impervious cover percentage can only lead to runoff of petroleum containing oily residues and gasoline/diesel as well as potential biohazards from their onsite sewage plant. Runoff where? Our home property contains spring fed pools year round. Those pools are source of life for wildlife and keep

erosion at bay supporting trees/native shrubs and grasses. Downstream from the springs in our yard is a wet-weather tank - a pond -that has been a source of water for local as well as migratory birds and other species. It has also been a family treasure as a swimming hole and canoe pond enjoyed by our children. I have hoped it would be a joy for our grandchildren as well - but as you can tell- it is put in jeopardy by the venue's existence and the anticipated contamination via runoff. Lest you think this is one little family's problem, after that tank location, the water flows downward and directly into Barton Creek. This is EVERYONE'S PROBLEM!! Effluent ponds at Blizexas that overflow into roadways, Barton and Rocky Creeks. How is that problem mitigated? How does TCEQ provide on site and immediate response to mismanaged systems when our flooding rains overwhelm their treatment capacity ? The Texas hill country beneath us is a porous web of underground channels, readily contaminated via irresponsible and poorly engineered wastewater management. Your citizenry isn't believing this project is being subjected to the highest standards of planning and held to accountability. I encourage you to use all resources to deepen your study of this proposed property before an irreversible disaster occurs. Thank you.

TCEQ Registration Form
January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Sue Munns

Mailing Address: 14909 Fitzhugh Rd

Physical Address (if different): _____

City/State: Austin **Zip:** 78736

This information is subject to public disclosure under the Texas Public Information Act

Email: SCMUNNS@GMAIL

Phone Number: (512) 636 9423

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☐ No

  If yes, which one? _____

REQUEST CONTESTED (FORMAL) CASE HEARING

☐ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

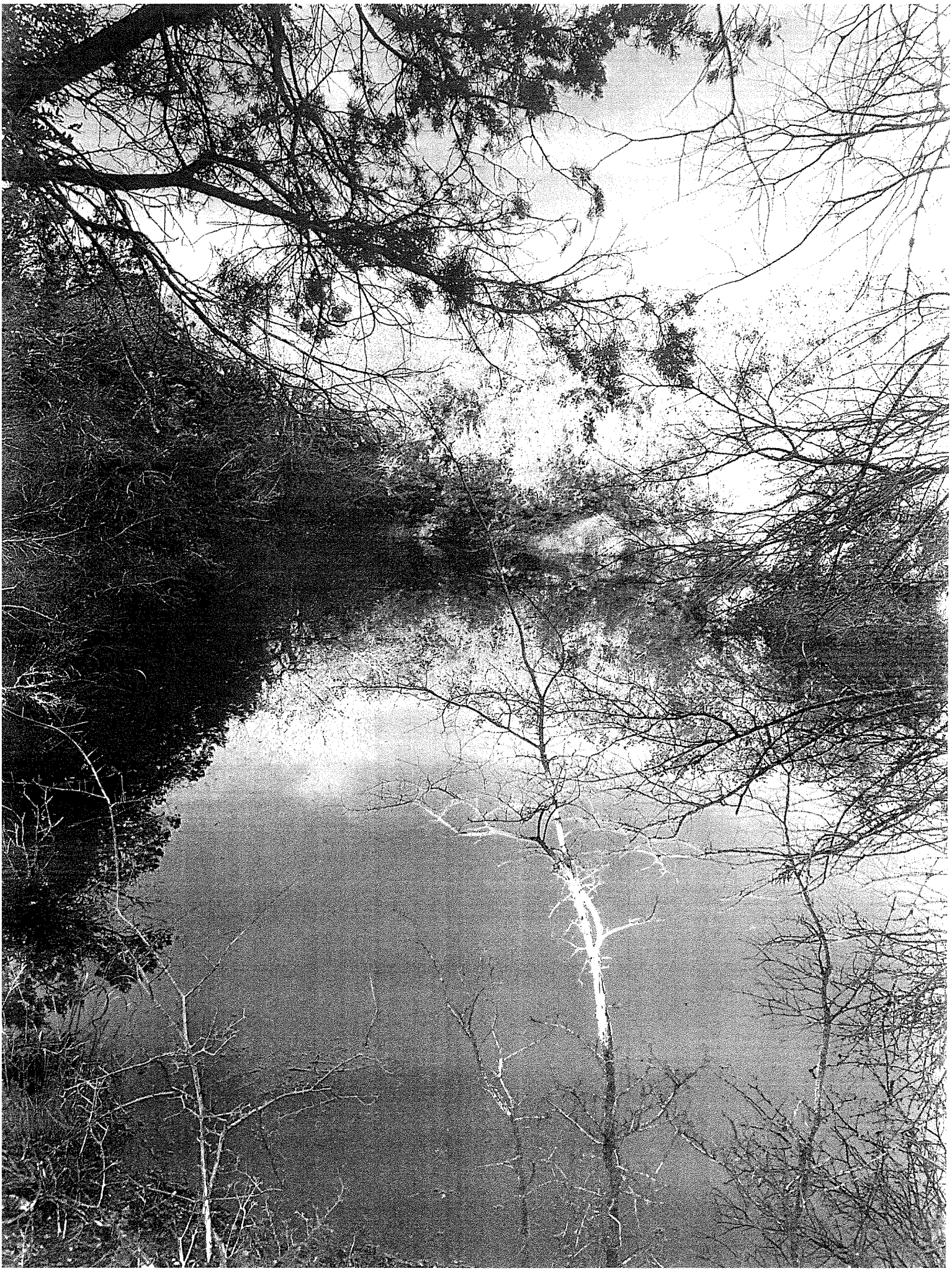
☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

Thanks!

(Written comments may be submitted at any time during the meeting)

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

Please give this form to the person at the information table. Thank you.



Crop

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: SUE MUNNS

Mailing Address: 14909 FITZHUGH

Physical Address (if different): _____

City/State: AUSTIN **Zip:** 78736

This information is subject to public disclosure under the Texas Public Information Act

Email: SGMUNNS@GMAIL.COM

Phone Number: (512) 636 9473

- Are you here today representing a municipality, legislator, agency, or group? ☑ Yes ☐ No

  If yes, which one? FITZHUGH NEIGHBORS

☑ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

TCEQ Registration Form

(2)

November 29, 2022

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Sue Munns

Mailing Address: 14909 Fitzhugh Rd Austin 78736

Physical Address (if different): _____

City/State: Austin **Zip:** 78736

*****This information is subject to public disclosure under the Texas Public Information Act*****

Email: SGMUNNS@GMAIL.COM

Phone Number: (512) 636 9423

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☒ No

  If yes, which one? _____

☐ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Monday, November 28, 2022 10:44 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: sgmunns@gmail.com <sgmunns@gmail.com>
Sent: Sunday, November 27, 2022 8:43 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: MRS Sue G Munns

EMAIL: sgmunns@gmail.com

COMPANY:

ADDRESS: 14909 Firtzhugh Road D
Austin TX 78736

PHONE: 5126369423

FAX:

COMMENTS: To the TCEQ Committee Re: Blizexas LLC Proposed Development - My family lives directly across Fitzhugh Road from the proposed concert and restaurant venue. In fact we are a mere 24 feet from the Blizexas owned property. Our concerns are dire and many. Wastewater - There seem to be numerous unknowns and undefined details stated about capacities at the proposed venue - specifically capacity of attendees, performer and employee load and therefore wastewater volumes. We have heard 5000 attendees, but also heard their numbers aren't fixed. We've been told

weekend performances - and assume that would mean Fridays, Saturday and Sundays - but will there be any other future added performance days? Do restaurant patrons number in those attendees or is restaurant capacity added to the headcount for concerts? What days/hours will restaurants be open? Bottom line - what amount of waste/effluent/holding capacity/perc capacity is being proposed and how will this waste be treated? If any overage of capacity occurs - describe the malodor that neighbors can expect? Please define the amount of effluent overage pollution that is acceptable poured into Barton Creek which is located directly downstream in multiple directions from this property? As it exists, the drainage along Fitzhugh Road in periods of heavy rain sends torrents of water with debris, tree and brush flotsam and no doubt some petroleum product waste from streets and private drives into the creek. How much worse will this proposed impervious cover make the flooding problem? How much worse will parking for 2000+ vehicles, no doubt including 18 wheelers associated with touring performers and restaurant /beverage suppliers, make this oil slick? Knowing Barton Creek is a prime water source in Northern Hays and into Travis counties for many aquatic and riparian bird, mammal and amphibious species, including some which are in jeopardy and/or endangered - is approval of this type of oversized build the legacy we want to own? Does the wastewater treatment require a turf to be maintained all year long? How is this turf managed in the 100+ degree summer - how much fresh water will be required? What about turf growth during extended periods of freeze? Leading to fresh water concerns - what is Blizexas source of fresh potable water? According to the Hays Trinity Groundwater Conservation District, our area is in a period of unprecedented drought. Is Blizexas planning to drill wells at the site - further depleting the damaged aquifer system? Homeowners are already suffering - what an insult this encroachment would be. There is no municipal water at this location. Other concerns: Communication Safety and Traffic - The development impact of a project of this magnitude brings untold safety worries for the neighbors as well as anyone who travels the narrow, predominantly two-lane roads of Fitzhugh, Crumley Ranch, Trautwein and Hamilton Pool. As it exists, any accident of just a single or two-car vehicle can halt traffic flow for hours as there are no alternate routes from many points on these roads. Emergency vehicles are ensnared as they try to respond along with travelers as there is often zero shoulder to maneuver on. Can you imagine the tragedy level of a late night accident caused by concert egress of a heavy burden of cars - on ANY ONE of these tiny rural roads? And add to that the cell infrastructure in the area is not at all sized to handle these types of crowds. Calls for emergency services will most definitely be hampered as service is degraded or nonexistent. Are the developers providing ERRCS - Emergency Responder Radio Communications System - wireless coverage in support of safety of the attendees at and nearby neighbors during events? At current wireless coverage /cell tower locations, capacity degradations of service impacting safety will likely exist 2 miles West/4 miles South and 5 miles East of the venue during events. This is a dangerous level of impact on many surrounding neighborhoods and homeowners not attending events, venue attendees and innocent drivers in the area. Is this a gamble we want to take with emergency preparedness and lives? Light Pollution - to put it simply - a venue of this size can only degrade the quality of rural life that is prized by neighbors and potentially impact wildlife habitat negatively. Noise Pollution - The impact area that concert sound will travel is vast! As it is, the hilly nature of the area has neighbors on social media often up in arms with complaints and that's just from personal home recorded music! I truly can't imagine the constant uproar and calls to sheriffs regarding a professional music show! Just as bad, the wildlife impact will surely be one of ecological disaster. The pristine Shield Ranch environment and multi-species native habitat will surely suffer. PUT SIMPLY - THIS IS NOT THE RESPONSIBLE, PROPER AND PRUDENT LOCATION FOR A LARGE CONCERT AND RESTAURANT VENUE.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 1:40 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: mrmunsell@gmail.com <mrmunsell@gmail.com>
Sent: Sunday, January 28, 2024 7:34 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Michael Munsell

EMAIL: mrmunsell@gmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD UNIT A
AUSTIN TX 78736-6301

PHONE: 5125740027

FAX:

COMMENTS: In addition to my prior comment, I would like to request a contested case hearing for this wastewater permit application.

IP No. 257929 Name MUNSELL, MICHAEL Organization Title

IP Detail | Address | Electronic Communications | Items & Actions | Additional IDs | Counties | Customers & Regulated Entities

* Request Received Date 10/19/2022 Last Polling Date Legislator

Comment

Save Reset

Individual

Name	Prefix	Suffix	Title	Organization	Concerned Citizen	Delete
MUNSELL, MICHAEL	-	-			NO	×

Add...

Address

Street/PO Box 14909 FITZHUGH RD State TX Zip 78736-6300

City AUSTIN Country USA

Building/Mail Drop UNIT A Multiple Addresses No

Electronic Communications

Type PHONE Country Phone (512) 574-0027 Ext.

Type Country Fax Ext.

Type EMAIL mrmunsell@gmail.com

IP No. 257929 Name MUNSELL, MICHAEL Organization Title

IP Detail | Address | Electronic Communications | Items & Actions | Additional IDs | Counties | Customers & Regulated Entities

Items

Show more columns

Number	Program	ID Type	Additional ID	Principal	CN	Status	Active	Comments	Delete
127674	WWPERMIT	PERMIT	WQ0016111001	BLIZEXAS LLC	CN605898865	ACTIVE	YES	NO	×

Associate...

Actions

Date/Time	Type	Delivery	Acknowledgement	Comments	Documents	Delete
01/28/2024 07:34 PM	HEARING REQUEST ENGLISH	ECOMMENT	-	YES	NO	×
10/19/2022 11:19 PM	COMMENT - WRITTEN ENGLISH	ECOMMENT	-	YES	NO	×

Add...

Edit Protestant Comments

Comments

The driveway easement that provides access to my property is directly across Fitzhugh Rd from this venue. I did not receive any notification from Rockingwall or TCEQ regarding these proposed waste treatment plans.

That driveway easement is a shared one that serves multiple properties, which are all downhill from this venue. Barton Creek is the southern boundary of a number of those properties, including mine. Runoff from this venue will potentially run onto our properties and ultimately into Barton Creek. I am highly concerned about the combined impact of the large volume of wastewater from the venue, the significant reduction in permeability planned (vast parking lots, large improvements, etc.), the relatively small lot size, and the thin marginal quality soil typical of this area.

Will there be sufficient soil volume with adequate margins of safety to properly handle such large amounts of effluent without the risk of contaminated runoff leaving the property? Are there plans to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on neighbouring properties, downhill / downstream properties, and Barton Creek? Are those plans sufficient to handle the flash flooding conditions that routinely occur in this area?

Thank you for considering my concerns.

Documents

+ Choose File

Drag & Drop files to the box above to upload, or select Choose File

OK Reset Cancel

Reviewed By GCW

APR 01 2025 H

Carrie & Vic Napiorkowski
14909 Fitzhugh Road, Unit B
Austin, Texas 78736
(512) 909-4515

March 26, 2025

Office of the Chief Clerk, MC 105
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
2025 MAR 31 AM 9:45
CHIEF CLERKS OFFICE

Re: Request for Contested Case Hearing – Permit #WQ0016111001 (Blizexas, LLC)

To the Office of the Chief Clerk:

We, Carrie and Witold (Vic) Napiorkowski, are writing to formally request a contested case hearing regarding the proposed TCEQ Permit #WQ0016111001, submitted by Blizexas, LLC. We are the owners of 12.69 acres located at 14909 Fitzhugh Road, Unit B, Austin, Texas, directly across the street from the proposed music venue and wastewater treatment facility. Our property extends to the middle of Barton Creek and lies directly in the path of potential runoff and environmental impact associated with the proposed development.

Proximity and Topography

Our home is situated off a shared easement directly across from the proposed venue and its retention ponds. The closest point of our property lies only 0.25 miles from the development site, and our home is approximately 0.5 miles away. Importantly, our land is approximately 80 feet lower in elevation than the proposed venue site, creating a natural downhill path for runoff.

Concerns Regarding Retention Ponds and Drainage

Two of the proposed retention ponds are situated beside the Blizexas driveway, adjacent to our shared easement. This area is surrounded by impervious cover, increasing the risk that pollutants—including treated effluent, oil, trash, and chemicals—could flow down our easement and directly into Barton Creek during rain events. This poses a direct threat to our land, water quality, and the wider ecosystem.

Environmental Impact and Water Quality Risks

Our well, which supplies water to our home and guest casita, draws from the Glen Rose Formation and is located downhill from the proposed venue. We are deeply concerned that contamination from wastewater discharge or overflow—especially with large event attendance and insufficient retention capacity—will flow into our well and Barton Creek. Our property also includes natural springs and karst features that are highly vulnerable to pollution.

Moreover, the area is habitat for the federally protected Golden-cheeked Warbler, whose presence brings joy to our family and our guests. The destruction or contamination of this sensitive habitat would be an irreversible loss.

Developer Transparency and Use Plans

We are also concerned that the permit application fails to accurately represent the intensity of the venue's use. In a 2021 meeting with nearby residents, Blizexas representatives disclosed plans to hold concerts 4–5 nights a week in peak season, with attendance potentially reaching 5,000 people. It is unclear whether the wastewater infrastructure proposed can adequately support this volume without leading to harmful discharge into our environment.

Conclusion and Request

Given the substantial and direct threat to our health, our water supply, our property, and the ecological integrity of Barton Creek, we respectfully request a contested case hearing for TCEQ Permit #WQ0016111001. While we are not opposed to responsible commercial development, we believe the proposed venue poses unacceptable environmental and public health risks—exacerbated by a lack of transparency in its planning and permitting process.

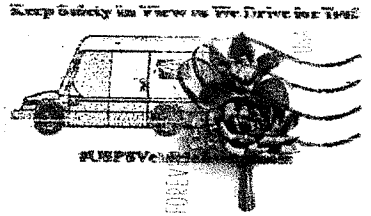
Thank you for your attention and for the opportunity to express our concerns.

Sincerely,

Carrie & Vic Napiorkowski

Carrie Napiorkowski
Unit B
14909 Fitzhugh Rd
Austin, TX 78736-6301

AUSTIN TX 787
RIO GRANDE DISTRICT
28 MAR 2025 PM 4 L



...ENVIRONMENTAL
QUALITY
2025 MAR 31 AM 9:35
CHIEF CLERKS OFFICE

Laurie Gharis, Chief Clerk
TCEQ, MC-105
P.O. Box 13087
Austin, TX 78711-3087

RECEIVED
MAR 31 2025
TCEQ MAIL CENTER
WT

78711-308787

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Thursday, March 27, 2025 2:39 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: carriewn@gmail.com <carriewn@gmail.com>
Sent: Thursday, March 27, 2025 1:15 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Carrie Napiorkowski

EMAIL: carriewn@gmail.com

COMPANY:

ADDRESS: 14909 Fitzhugh Road, unit B
Austin, TX 78736

PHONE: 5129094525

FAX:

COMMENTS: Carrie & Vic Napiorkowski 14909 Fitzhugh Road, Unit B Austin, Texas 78736 (512) 909-4515 March 26, 2025 Office of the Chief Clerk, MC 105 Texas Commission on Environmental Quality P.O. Box 13087 Austin, Texas 78711-3087 Re: Request for Contested Case Hearing – Permit #WQ0016111001 (Blizexas, LLC) To the Office of the Chief Clerk: We, Carrie and Witold (Vic) Napiorkowski, are writing to formally request a contested case hearing regarding the proposed TCEQ Permit #WQ0016111001, submitted by Blizexas, LLC. We are the owners of 12.69 acres located at 14909 Fitzhugh Road, Unit B, Austin, Texas, directly across the street from the proposed music venue and wastewater treatment facility. Our property extends to the middle of Barton Creek and lies directly in the path of potential runoff and environmental impact associated with the proposed development. Proximity and Topography Our home is situated off a shared easement directly across from the proposed venue and its retention ponds. The closest point of our property lies only 0.25 miles from the development site, and our home is approximately 0.5 miles away. Importantly, our land is approximately 80 feet lower in elevation than the proposed venue site, creating a natural downhill path for runoff. Concerns Regarding Retention Ponds and Drainage Two of the proposed retention ponds are situated beside the Blizexas driveway, adjacent to our shared easement. This area is surrounded by impervious cover, increasing the risk that pollutants—including treated effluent, oil, trash, and chemicals—could flow down our easement and directly into Barton Creek during rain events. This poses a direct threat to our land, water quality, and the wider ecosystem. Environmental Impact and Water Quality Risks Our well, which supplies water to our home and guest casita, draws from the Glen Rose Formation and is located downhill from the proposed venue. We are deeply concerned that contamination from wastewater discharge or overflow—especially with large event attendance and insufficient retention capacity—will flow into our well and Barton Creek. Our property also includes natural springs and karst features that are highly vulnerable to pollution. Moreover, the area is habitat for the federally protected Golden-cheeked Warbler, whose presence brings joy to our family and our guests. The destruction or contamination of this sensitive habitat would be an irreversible loss. Developer Transparency and Use Plans We are also concerned that the permit application fails to accurately represent the intensity of the venue's use. In a 2021 meeting with nearby residents, Blizexas representatives disclosed plans to hold concerts 4–5 nights a week in peak season, with attendance potentially reaching 5,000 people. It is unclear whether the wastewater infrastructure proposed can adequately support this volume without leading to harmful discharge into our environment. Conclusion and Request Given the substantial and direct threat to our health, our water supply, our property, and the ecological integrity of Barton Creek, we respectfully request a contested case hearing for TCEQ Permit #WQ0016111001. While we are not opposed to responsible commercial development, we believe the proposed venue poses unacceptable environmental and public health risks—exacerbated by a lack of transparency in its planning and permitting process. Thank you for your attention and for the opportunity to express our concerns. Sincerely, Carrie & Vic Napiorkowski

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 18, 2024 11:31 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: carriewn@gmail.com <carriewn@gmail.com>
Sent: Wednesday, January 17, 2024 6:01 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Carrie Napiorkowski

EMAIL: carriewn@gmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD UNIT B
AUSTIN TX 78736-6301

PHONE: 5125549210

FAX:

COMMENTS: As a property owner who lives a mile directly across from the venue, i am extreamly concerned with septic discharge and storm surge collecting and polluting our property, our grazing field for cattle, and end up in barton creek. We own directly on the creek, and there are natural springs on our property. These springs potentially would be contaminated. I am requesting a contested case hearing.

Misty Botello

From: PUBCOMMENT-OCC
Sent: Tuesday, August 22, 2023 8:52 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: carriewn@gmail.com <carriewn@gmail.com>
Sent: Monday, August 21, 2023 7:36 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Carrie Napiorkowski

EMAIL: carriewn@gmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD Unit b
AUSTIN TX 78736-6300

PHONE: 5129094515

FAX:

COMMENTS: I live within a mile (across the street) of the proposed venue. The soil conditions are unfit for the amount of discharge expected and are underestimated by the venue, leading to ground and water contamination . I request a contested case hearing. Since my property is on Barton Creek there is a high probsbility of contamination to the water and my property that my cows graze on.

10

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: CARRIE NAPIORKOWSKI

Mailing Address: 14909 FITZHUGH RD. UNIT B

Physical Address (if different): _____

City/State: AUSTIN **Zip:** 78736

This information is subject to public disclosure under the Texas Public Information Act

Email: CARRIEWN@GMAIL.COM

Phone Number: (512) 909 4515

- Are you here today representing a municipality, legislator, agency, or group? ☒ Yes ☐ No

  If yes, which one? Fitzhugh Neibors

☒ **Please add me to the mailing list.**

☒ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Blizexas (elev. 1,070 ft)
Sinkholes (elev. 950 ft)

Poco Loco Ranch
Napiorkowski Family
14909 B Fitzhugh Rd.
Austin, Texas 78736

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 25, 2024 12:28 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: carriewn@gmail.com <carriewn@gmail.com>
Sent: Wednesday, January 24, 2024 5:33 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Carrie Napiorkowski

EMAIL: carriewn@gmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD UNIT B
AUSTIN TX 78736-6301

PHONE: 5125549210

FAX:

COMMENTS: As a resident of Hays County, boarding Travis, i adamantly oppose the development of this development. The ecological damage will be wide dpread. Do not let the threat of a retired Billionaire sway you. The thousands of everday Texans depend on you doing your upmost to protect our fragile waterways from overuse, pollutants and overall degradation

(6) Carrie

(7) Dick

TCEQ Registration Form

November 29, 2022

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

+Dick

Name: Carrie Napiorkowski

Mailing Address: 14909 Fitzhugh Rd. # B

Physical Address (if different): _____

City/State: Austin **Zip:** 78736

This information is subject to public disclosure under the Texas Public Information Act

Email: CARRIEWN@gmail.com

Phone Number: (512) 909-4515

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☑ No

  If yes, which one? _____

☐ **Please add me to the mailing list.**

☑ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 18, 2024 11:32 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: carriewn@gmail.com <carriewn@gmail.com>
Sent: Wednesday, January 17, 2024 6:39 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Carrie Napiorkowski

EMAIL: carriewn@gmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD UNIT B
AUSTIN TX 78736-6301

PHONE: 5125549210

FAX:

COMMENTS: In addition to my previous comment,i am concerned about the fact that the draft permit doesn't require removal or testing of Nitrogen and Phosphorous, or that the permit levels for other pollutants are too high.

Misty Botello

From: PUBCOMMENT-OCC
Sent: Thursday, August 24, 2023 3:13 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: Carrienapior@hotmail.com <Carrienapior@hotmail.com>
Sent: Thursday, August 24, 2023 2:34 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MRS Carrie Napiorkowski

EMAIL: Carrienapior@hotmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD UNIT B
AUSTIN TX 78736-6301

PHONE: 5129094515

FAX:

COMMENTS: My property is less than a mile from the proposed venue. Barton.Creek runs tjough our land. We have several karst (mino hysers) on our lower property ht the creek. Contaminated discharge can enter and polite the waterway.Blizexas has not included that these karst are within one mile of the discharge, and when we have heavy tain flow, the septic will travel down my driveway into the many mini caves by the creek.

WQ
12674

Debbie Zachary

From: PUBCOMMENT-OCC
Sent: Wednesday, October 5, 2022 9:14 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

From: carriewn@gmail.com <carriewn@gmail.com>
Sent: Tuesday, October 4, 2022 10:28 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: MRS Carrie Napiorkowski

EMAIL: carriewn@gmail.com

COMPANY:

ADDRESS: 14909 FITZHUGH RD UNIT B
AUSTIN TX 78736-6301

PHONE: 5129094515

FAX:

COMMENTS: As a neighbour whose shared driveway easement is located DIRECTLY across the street from the proposed music venue,no one on our easement has been notified concerning the waste treatment plant being proposed. Our ground quality in this area of Hays County is very poor. We do not have much soil , more like a clay that sits on top of limstone. There is no way that the thin layer of soil/ clay can absorb the effluent. This leads to the potential of waste leackage directly into our personal water wells and into the many streams that lead to Barton Creek which is located

dangerously close to the discharge. Additionally, the waste will be produced from 4800 guests, numerous staff and a restaurant. This waste will NOT be discharged over a weeks period, but rather over a few weekend days when they have concerts. This waste water plant is a great danger to our comminities health and safety.

Kimberly Muth

From: PUBCOMMENT-OCC
Sent: Friday, August 18, 2023 2:17 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

PM
H

From: kimmeytx@gmail.com <kimmeytx@gmail.com>
Sent: Friday, August 18, 2023 9:05 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Kimmey K Norris

EMAIL: kimmeytx@gmail.com

COMPANY:

ADDRESS: 190 CAROL ANN DR
AUSTIN TX 78737-9594

PHONE: 2106336849

FAX:

COMMENTS: I am writing to comment on the Proposed Permit No. WQ0016111001 for which Blizexas, LLC has applied. The application is for authorization of disposal of an average daily flow of 12,000 gallons/day of treated wastewater. I am submitting comments, requesting a public meeting to address comments on this proposed permit, and requesting a contested case hearing. The basis for requesting a contested case hearing is as follows: My name is Kim Norris, 190 Carol Ann Dr, Austin, TX 78737, phone 210-633-6849 The applicant is Blizexas, LLC; the proposed permit number is WQ0016111001 My location is 190 Carol Ann Dr, Austin, TX, 78737 and the distance of my property/activities relative to

the proposed facility is 1.9 miles by road and ~1.1 miles as the crow flies. The specific description of how I would be adversely affected by the facility in a way not common to the general public is: the discharge of treated wastewater effluent from this facility will impact the Barton Creek Watershed, an environmentally sensitive area in my immediate neighborhood as well as the fact that consuming an average of more than 12,000 gallons/day of water from our aquifers (from which the 12,000 gallons/day of treated wastewater would be pumped) will have a seriously adverse impact on my property and the properties of my neighbors where many wells are already running dry. I am confident there are issues of fact in the petition that I could dispute; however, despite requesting a copy of or access to the application, I've been unable to read its contents. My comments: I have grave concerns that this volume of treated wastewater will have a negative material water quality impact. Water is a very precious resource in this area and this permit would jeopardize both the availability and the quality of the water on which my neighborhood relies. The most significant aspect is that granting this permit would allow Blizexas to proceed with planning, construction, and operation of a business without having performed an Environmental Impact Study, nor having obtained a Hays Trinity Groundwater Drilling Permit. It seems that this process is backwards. The impact of the proposed venue would be horrific in terms of traffic congestion, intoxicated drivers on our roads, substantial light pollution, noise pollution, and for me, my nighttime view would be blighted with an unobstructed view of venue lights. Apparently, Blizexas did perform a cursory Traffic Impact Study with no public notice, opportunity for comment, or meeting to discuss. I am confident the impact of traffic from this venue would be catastrophic in terms of residents access to EMS, impeded access from heavy construction equipment, congestion from attendees, some of whom will be intoxicated. Sincerely, Kim Norris

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Monday, December 5, 2022 8:17 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: kimmeytx@gmail.com <kimmeytx@gmail.com>
Sent: Sunday, December 4, 2022 1:47 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Kim Norris

EMAIL: kimmeytx@gmail.com

COMPANY:

ADDRESS: 190 CAROL ANN DR kimmeytx@gmail.com
AUSTIN TX 78737-9594

PHONE: 2106336849

FAX:

COMMENTS: I could not attend Tuesday's meeting but I beg you to hold at least 1 more public hearing. What is being proposed is unconscionable. That it is even a possibility this company could be allowed to drill a well and consume an average of 15,000 gallons/day when homeowners are having to drill deeper or be limited to rainwater is obscene. That drain on our water source alone is sufficient reason to deny this permit. In addition, although roads can be widened, Fitzhugh presents unique challenges. There is so little margin on either side of the road and the sharp turn at the low-

water crossing would need to be addressed. To consider allowing this development to proceed. While simultaneously re-doing the roads is a nightmare. And will they pay to redo the roads? Compensate people who find their properties being used as additional parking? Ensure there is no impact on our dark skies? Protect. The Barton Creek watershed? How they could have looked at that location and thought there'd be no objections and what a great spot for a large concert venue is beyond me. No reasonable person would have even considered it. This must be stopped in its tracks.

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Monday, November 28, 2022 10:44 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: kimmeytx@gmail.com <kimmeytx@gmail.com>
Sent: Sunday, November 27, 2022 4:07 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Kim Norris

EMAIL: kimmeytx@gmail.com

COMPANY:

ADDRESS: 190 CAROL ANN DR
AUSTIN TX 78737-9594

PHONE: 2106336849

FAX:

COMMENTS: This location is particularly ill-suited to a large concert venue. Fitzhugh Rd is already over stressed and in constant need of repair, and is too small to support the level of traffic this venue would draw. This type of venue would also put a substantial drain on our diminished water sources and would pose a danger to the watershed by virtue of runoff. A venue like this would also result in a great deal of light pollution as well as noise pollution. There are many other locations that could better support such a venue.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 23, 2024 9:40 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: pam@pannes.org <pam@pannes.org>
Sent: Monday, January 22, 2024 7:44 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Pamela Pannes

EMAIL: pam@pannes.org

COMPANY:

ADDRESS: 12027 BONHAM RANCH RD
DRIPPING SPRINGS TX 78620-5127

PHONE: 5129703331

FAX:

COMMENTS: I am requesting a contested hearing regarding this permit.

TCEQ Registration Form

November 29, 2022

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: MOLLIE BEA PASSERNIG & STEFAN PASSERNIG

Mailing Address: 319 Carol Ann Dr.

Physical Address (if different): _____

City/State: Austin, TX **Zip:** 78737

This information is subject to public disclosure under the Texas Public Information Act

Email: passernig@gmail.com

Phone Number: (512) 288-7137

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☐ No

  If yes, which one? BCNA / Paul's Valley Rd.

☐ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

RECEIVED
NOV 29 2022
AT PUBLIC MEETING

☑ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

I would like to request public hearings for TCEQ departments deciding water supply, land application and others applicable to this proposed Blizexas concert venue.

Please give this form to the person at the information table. Thank you.

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: MOLLIE BEA PASSERNIG

Mailing Address: 319 Carol Ann Dr., Austin, TX 78737

Physical Address (if different): _____

City/State: Austin, TX **Zip:** 78737

This information is subject to public disclosure under the Texas Public Information Act

Email: passernig@gmail.com

Phone Number: (512) 706-5521

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☑ No

  If yes, which one? _____

☐ **Please add me to the mailing list.**

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

Please reject and return this permit

☑ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Request upstream and down stream monitoring of Barton Creek. Please inform the public where the TLAP fields are located-which plat #. Bigger rain events are predicted. Please do not accept the minimum. Please verify data that Blizetex has provided. TCEQ should not simply accept what an applicant states without verification. Environmental impact. Please do site visits during flash flood. Not enough soil for this size discharge zone - How can they have an injection permit and yet the committee is unaware? Endangered species need to be accessed. 12K gallon discharge ~~per~~ limit the venue to ~~[illegible]~~

Please give this form to the person at the information table. Thank you.

What are the limits of nitrogen, phosphorus, potassium, etc? in the wastewater.

Do not allow effluent ~~to allowed~~ to flow into Barton Creek.

Chapter 222 – to maintain freshwater, reduce waste, do not allow injection – This application is opposed to all of Chapter 222.

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Monday, November 28, 2022 10:43 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: passernig@gmail.com <passernig@gmail.com>
Sent: Sunday, November 27, 2022 9:05 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Mollie Passernig

EMAIL: passernig@gmail.com

COMPANY:

ADDRESS: 319 CAROL ANN DR
AUSTIN TX 78737-9595

PHONE: 5122887137

FAX:

COMMENTS: Living within the three mile radius of the proposed concert venue off Fitzhugh Road, I write to voice my opposition to TCEQ's draft TLAP permit. Regarding the disposal of treated wastewater up to 12,000 gallons onto 2.75 acres, can the soil absorb that amount of liquid? If not, what is the back up plan? What distance will the odor from sludge be noticeable? I am extremely concerned with the contamination of surface water, groundwater and the ensuing runoff. Other central Texas rivers have been ruined with treated wastewater despite following TCEQ's standards. Let's

not put Barton Creek and this watershed at such risk. Our drinking water is finite. Please do not permit the Rockingwall Ranch, Blizexas LLC to proceed with the concert venue. Thank you.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 8, 2024 3:35 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: GEAA-FitzhughMusicVenueCommentsFinal_010524.pdf

H

From: annalisa@aquiferalliance.org <annalisa@aquiferalliance.org>
Sent: Friday, January 5, 2024 4:39 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MS Annalisa Peace

EMAIL: annalisa@aquiferalliance.org

COMPANY: Greater Edwards Aquifer Alliance

ADDRESS: PO BOX 15618
SAN ANTONIO TX 78212-8818

PHONE: 2103200149

FAX: 2103206298

COMMENTS: Please accept the attached comments on behalf of the fifty-seven member groups of the Greater Edwards Aquifer Alliance.

GEAA Greater Edwards Aquifer Alliance

Member Organizations

Alamo, Austin, and Lone Star chapters of the Sierra Club
Bexar Audubon Society
Austin, Bexar and Travis Green Parties
Bexar Grotto
Boerne Together
Bulverde Neighborhood Alliance
Bulverde Neighbors for Clean Water
Cibolo Center for Conservation
Citizens for the Protection of Cibolo Creek
Comal County Conservation Alliance
Environment Texas
First Universalist Unitarian Church of SA
Friends of Canyon Lake
Friends of Dry Comal Creek
Friends of Government Canyon
Fuerza Unida
Green Society of UTSA
Guadalupe River Road Alliance
Guardians of Lick Creek
Headwaters at Incarnate Word
Helotes Heritage Association
Hill Country Alliance
Kendall County Well Owners Association
Kinney County Ground Zero
Leon Springs Business Association
Native Plant Society of Texas – SA
Northwest Interstate Coalition of Neighborhoods
Pedernales River Alliance – Gillespie Co.
Preserve Castroville
Preserve Lake Dunlop Association
Preserve Our Hill Country Environment
RiverAid San Antonio
San Antonio Audubon Society
San Antonio Conservation Society
San Geronimo Valley Alliance
San Marcos Greenbelt Alliance
San Marcos River Foundation
Save Barton Creek Association
Save Our Springs Alliance
Scenic Loop/Boerne Stage Alliance
Securing a Future Environment
SEED Coalition
Signal Hill Area Alliance
Sisters of the Divine Providence
Solar San Antonio
Texas Cave Management Association
Trinity Edwards Spring Protection Assoc.
Water Aid – Texas State University
Wildlife Rescue & Rehabilitation
Wimberley Valley Watershed Association

PO Box 15618
San Antonio, Texas 78212
(210) 320-6294

January 5, 2024

Texas Commission on Environmental Quality
Office of the Chief Clerk, MC 105
P.O. Box 13087
Austin, Texas 78711-3087

Submitted electronically at http://www14.tceq.texas.gov/epic/eComment/

Re: Comments and Contested Case Hearing Request Regarding Blizexas, LLC proposed Texas Land Application Permit (TLAP) No. WQ0016111001

Please accept the attached comments on behalf of the fifty-seven member groups of the Greater Edwards Aquifer Alliance.

1.0 Background

Blizexas, LLC, 258 Union Avenue, Los Gatos, California 95032, has applied to the Texas Commission on Environmental Quality (TCEQ) for a new permit, proposed TCEQ Permit No. WQ0016111001, to authorize the disposal of treated domestic wastewater at a daily average flow not to exceed 12,000 gallons per day via subsurface drip irrigation system with a minimum area of 2.75 acres of public access land.

The wastewater treatment plant would service a proposed 5000-seat amphitheater, the Fitzhugh Music Venue. The treatment facility and disposal site would be located approximately 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road, in Hays County, Texas 78737. The proposed wastewater treatment facility and disposal site would be located in the drainage basin of Barton Creek in Segment No. 1430 of the Colorado River Basin, approximately 1/2 mile from Barton Creek. The proposed development site is located within the Edwards Aquifer Contributing Zone (EACZ).

2.0 Greater Edwards Aquifer Alliance (GEAA)

GEAA is a 501(c)(3) nonprofit organization that promotes effective broad-based advocacy for the protection and preservation of the Edwards and Trinity Aquifers, their springs, watersheds, and the Texas Hill Country lands that sustain them. GEAA has multiple members who would be adversely affected by the permit application of Blizexas LLC.

GEAA's members have serious concerns regarding the permit application, relating to the degradation of Barton Creek, the Edwards Aquifer, and area water wells that will likely occur with the irrigation of

treated sewage and wastewater/stormwater runoff at the proposed site. We therefore recommend that the Fitzhugh Music Venue wastewater permit be denied, for the reasons presented in these comments.

3.0 Specific Concerns Regarding the Permit Application

Under the federal Clean Water Act, TCEQ is charged with maintaining the quality of our state's waters and protecting their existing uses. The Fitzhugh Music Venue, as currently proposed, would likely degrade Barton Creek and local groundwater quality in violation of the Clean Water Act and state law through treated sewage and stormwater runoff.

3.1 Wastewater Concerns

The draft wastewater permit issued by TCEQ does not require Nitrogen or Phosphorous removal and is extremely lax, especially given the environmentally-sensitive nature of the area within the EACZ. Nitrogen and Phosphorous are known to cause eutrophication of waterways, which threatens aquatic life. Barton Creek is already under nutrient stress in this area, with significant eutrophication present, especially during warm weather months (Fig. 1).

Fig 1: Barton Creek ½ mile from the proposed development site already suffers from eutrophication

The draft permit limits of 20 mg/l for both Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) are also very lax and would result in pollution of Barton Creek during saturation/runoff conditions. Most wastewater permits currently being issued in close proximity to a waterway within the EACZ stipulate a maximum limit of 5 mg/l for both TSS and BOD, even on TLAP permits issued for locations not as environmentally-sensitive as where the

Fitzhugh Music Venue would be located, such as the nearby Headwaters development TLAP[1]. The effluent concentration levels in the final Headwaters TLAP permit are 5 mg/l BOD, 5 mg/l TSS, 2 mg/l ammonia-nitrogen (NH_3-N), and 1 mg/l for total phosphorus (TP), which is far more stringent than the effluent levels concentrations being proposed for the Fitzhugh Music Venue TLAP draft permit. Further, the Fitzhugh Music Venue TLAP draft permit also has no requirement for *E. coli* testing/limits, which needs to be added to the draft permit to protect public safety.

Aside from concerns over pollutant limits, the layout of the proposed Fitzhugh Music Venue itself is also problematic from a wastewater standpoint. The developer has proposed 6 relatively small (roughly ½ acre each) effluent drip fields comprising a total of 2.75 acres. Each TLAP field would be surrounded by impervious cover (Fig. 2). This means that even light precipitation would cause runoff of wastewater that could threaten not only Barton Creek but surrounding properties as well.

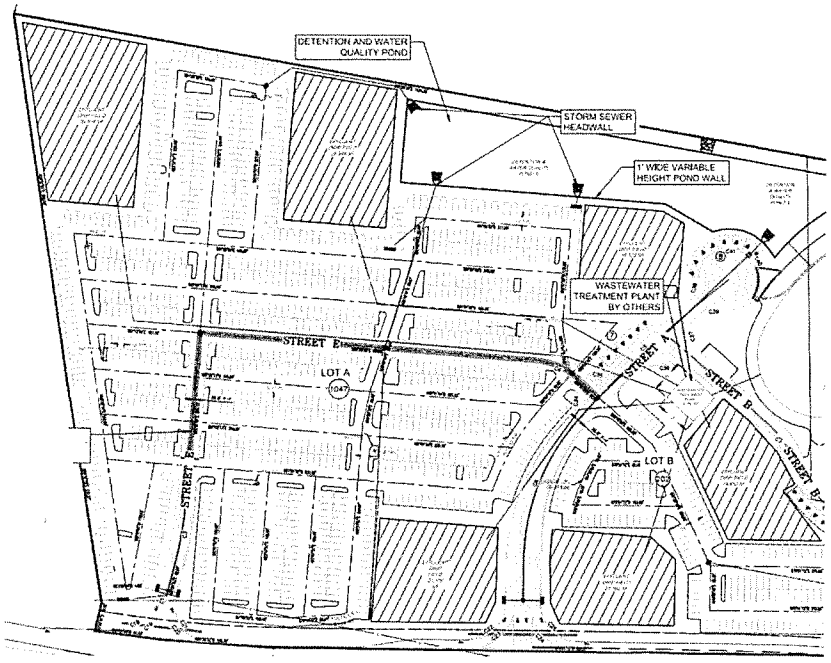


Fig. 2: Fitzhugh Music Venue: diagonal lines show 6 small TLAP fields surrounded by impervious cover

At a bare minimum, GEAA recommends a 5-5-2-0.5 permit for the Fitzhugh Music Venue wastewater treatment plant: 5 mg/l TSS, 5 mg/l BOD, 2 mg/l Ammonium Nitrate, and 0.5 mg/l Phosphorous, rather than the very lax 20/20 permit levels for TSS/BOD that were given in the draft permit (with no Nitrogen or Phosphorous limits).

[1] TCEQ Permit No. WQ0014587001, issued in July 2017 and renewed in June 2021

3.2 Stormwater/Impervious Cover Concerns

While the lax draft Fitzhugh Music Venue wastewater permit is concerning, perhaps an even bigger environmental issue is the high amount of impervious cover the developer has proposed, 66.45% (Fig. 3). A heavily paved development with high impervious cover such as what is proposed would be more typical in an urban setting than in a rural area with an important contributing stream (Barton Creek) nearby.

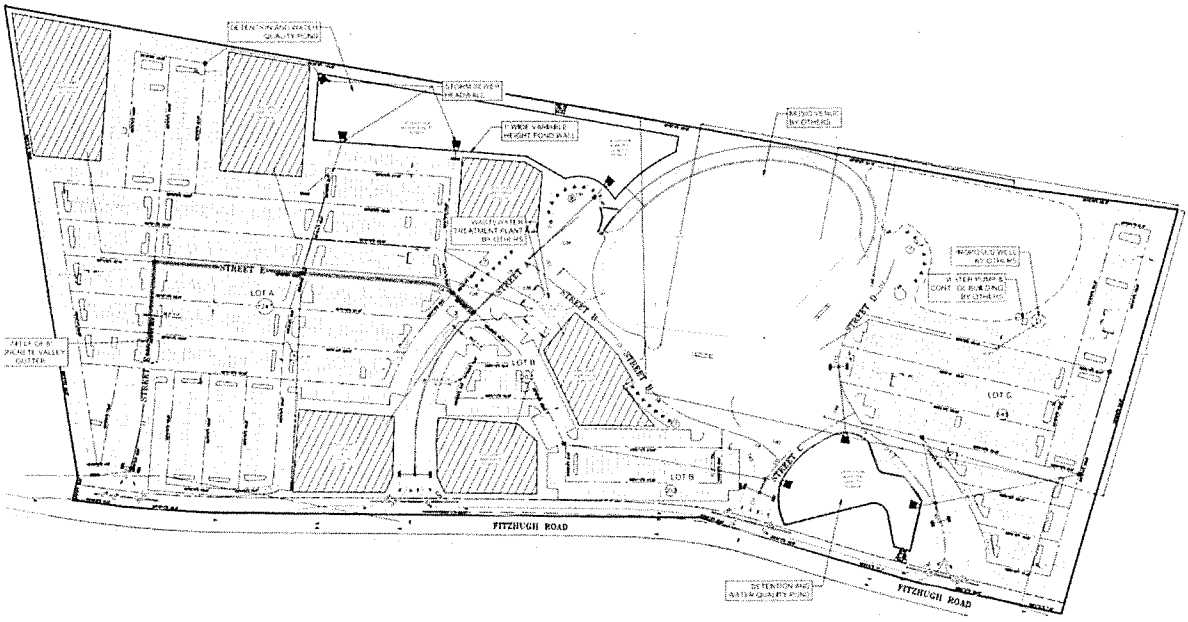


Fig. 3: Fitzhugh Music Venue's area is mostly impervious parking spaces, asphalt driveways, and concrete

The high amount of impervious cover poses a threat to both groundwater and surface water quality and is inconsistent with current land uses in this rural area of Hays County. The City of Austin Extra Territorial Jurisdiction (ETJ), which is located less than a mile from the proposed development site, follows the Save Our Springs (SOS) Ordinance, which stipulates maximum impervious cover limits of 20% in the EACZ. The Dripping Springs ETJ, also located less than a mile from the proposed development site, places a 35% impervious cover restriction in the EACZ. These limits are in place not only to protect nearby Barton Creek, but also to protect the Edwards Aquifer and Trinity Aquifer that supply drinking water to area well-owners, residents, and businesses. There is no other reliable source of drinking water in this area besides groundwater.

While the impervious cover percent is certainly too high for this area, the type of impervious cover is even more troubling. Most of the impervious cover is allocated for the 1,823 parking spaces in the proposed sprawling parking lot. These parking spaces would be subject to auto pollutants leaking from parked vehicles; pollutants including engine oil, gasoline, power steering fluid, brake fluid, heavy metals from car batteries, and tar-based sealants that protect parking lots and asphalt driveways. The applicant also plans to construct asphalt driveways, fire

access roads, and turn lanes into and out of the venue. We are troubled by the extensive use of asphalt, a material known to impair water quality, as part of the developer's plan.

3.3 Stormwater Detention Concerns

The potential construction phase of this project is also of great concern, especially given the 150-foot elevation difference between the development site and nearby Barton Creek, just ½ mile away and down slope. There are legitimate concerns that the temporary erosion and sedimentation control facilities proposed by the developer will not be adequate to prevent pollution of Barton Creek during the construction phase. The addition of turn lanes on Fitzhugh Road, while certainly necessary for a development of this size, will just add more construction debris and impervious cover to a development that exceeds impervious cover limits enforced by the contiguous cities of Austin and Dripping Springs.

Once construction is completed, the developer proposes two batch detention ponds as the sole means of maintaining water quality for this development. Batch detention ponds can be effective for removing TSS; however, they are less effective at removing fluid pollutants such as oil and gasoline and wastewater nutrients such as Nitrogen and Phosphorous that may not be absorbed within a land application irrigation field. Further, these batch detention ponds would also require significant maintenance for a 5000-seat concert venue, that is regularly hosting concert events, due to the excessive amounts of trash and floatable debris generated during these events. If these batch detention ponds aren't properly maintained, solid pollutants in addition to fluid pollutants could find their way into Barton Creek and local groundwater.

During the past twenty years, GEAA has seen numerous stormwater detention plans that were never fully implemented or that failed to function properly coupled with a failure on the part of TCEQ staff to make sure approved plans were adhered to and functional through follow-up inspections. Given the budgetary and staff shortages of this agency, we urge caution in approving high maintenance plans such as this one.

3.4 Combined Wastewater/Stormwater Concerns

Taken together, the individual wastewater concerns and stormwater concerns combine to create a synergistic, polluting mess; saturated TLAP fields would result from the fact that the developer is proposing the absolute minimum irrigation area to meet TCEQ requirements (2.75 acres), with no "buffer" area allocated. On top of this, the soil in this part of Central Texas is thin and predominantly clay, the least absorbent soil type. As soon as the 6 proposed TLAP fields become saturated, they would in effect become additional impervious cover, increasing the impervious cover percentage from 66.45% to 75%. Even with light rainfall, the saturated TLAP fields would combine their wastewater runoff with stormwater runoff from the parking lot, driveways, concrete venue itself, and other impervious surfaces. This combined flow is supposed to be collected by just two batch detention ponds.

Yet Fig. 4 shows the problem with this approach. The property consists of three separate drainage basins, shown as E1, E2, and E3 below. The two bold rectangles show the approximate locations of the proposed batch detention ponds that are supposed to collect the combined

wastewater/stormwater runoff. Basin E1 drains approximately 30% of its area to the left of the first detention pond, sending runoff downhill to Barton Creek. Basin E2 has flow from left to right but also from top to bottom of the diagram; these competing directions will combine basin flow into one stream, much of which will likely miss the second batch detention pond. Lastly, the third basin (E3) has no batch detention pond to collect runoff, assuring that this runoff from Basin E3 will also end up in Barton Creek.

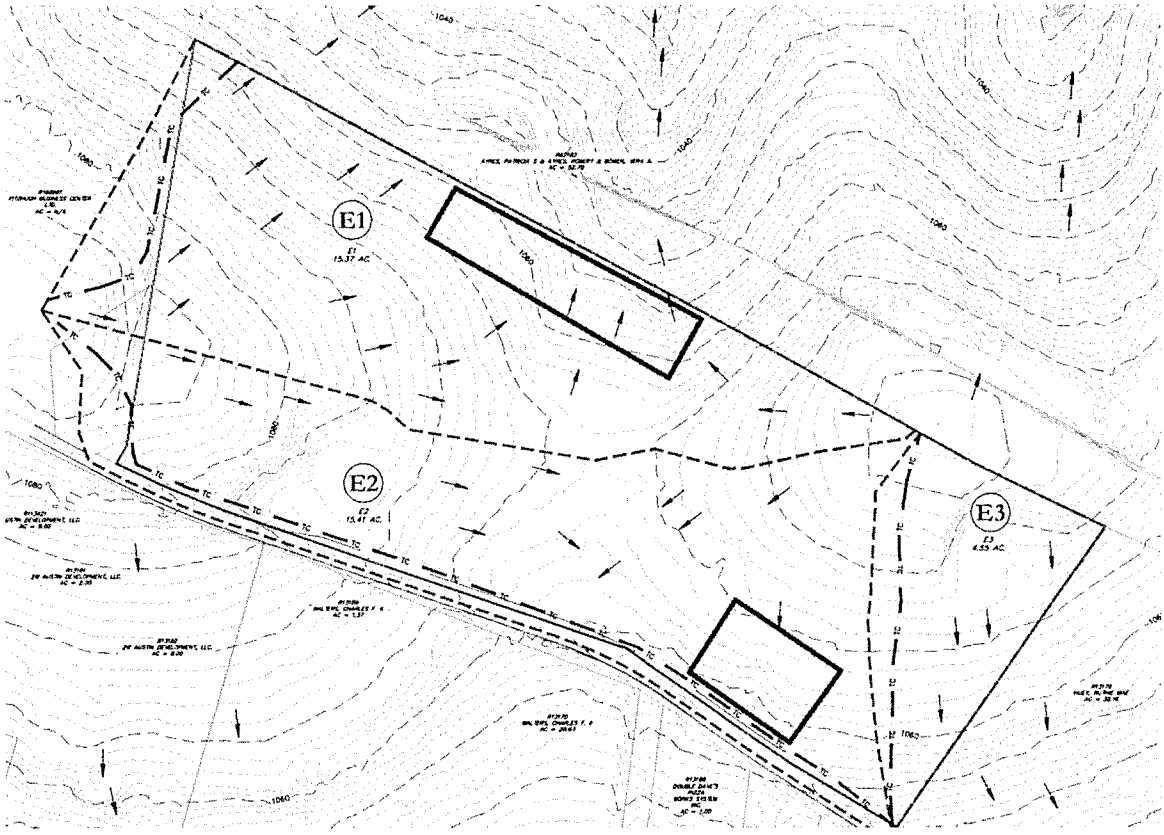


Fig. 4: Drainage diagram shows roughly half of the combined wastewater/stormwater runoff would miss the two batch detention ponds and wind up in Barton Creek

Because the entire development is in the Barton Creek watershed, there's nowhere else for the runoff that misses the batch detention ponds to go. Given the location and size of the batch detention ponds shown in Fig. 4, roughly half of the runoff will miss the batch detention ponds and wind up in Barton Creek.

One might ask why there isn't a third batch detention pond proposed by the developer, or why the two detention ponds shown aren't sufficiently sized to adequately collect more wastewater/stormwater runoff; thereby, reducing the amount of pollutants introduced into Barton Creek. The answer is that between the large 5000-seat amphitheater, the necessary driveways, and the 1,823 parking spaces, there simply isn't any additional room for larger batch

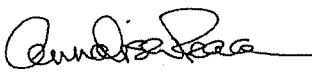
detention ponds or more detention ponds. But this is a terrible reason to justify polluting Barton Creek and surrounding properties.

3.0 Conclusions and Recommendations

In summary, a 5000-seat amphitheater and all of the wastewater and stormwater it would generate is ill-suited for the environmentally-sensitive nature of the Fitzhugh area. Existing development in this area respects the proximity to Barton Creek and location over the EACZ and consists predominantly of single-family homes on one acre plus lots, with On-Site Septic Facilities (OSSFs) for wastewater. Dropping in a massive amphitheater with 2/3 impervious cover and undersized TLAP fields is not only incongruous with the existing area aesthetic but will likely lead to significant surface water and groundwater contamination. We urge TCEQ to reject the Blizexas LLC wastewater permit application in its entirety.

Thank you for the opportunity to submit these comments.

Respectfully,



Annalisa Peace
Executive Director
Greater Edwards Aquifer Alliance

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 30, 2024 12:21 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: GEAA-RevisedFitzhughMusicVenueComments_012924.pdf

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: annalisa@aquiferalliance.org <annalisa@aquiferalliance.org>
Sent: Monday, January 29, 2024 3:53 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MS Annalisa PEace

EMAIL: annalisa@aquiferalliance.org

COMPANY: Greater Edwards Aquifer Alliance

ADDRESS: PO BOX 15618
SAN ANTONIO TX 78212-8818

PHONE: 2103200149

FAX: 2103206298

COMMENTS: Please accept the revised attached comments on behalf of the fifty-seven member groups of the Greater Edwards Aquifer Alliance.

GEAA
Member Organizations

Alamo, Austin, and Lone Star chapters of the Sierra Club
Bexar Audubon Society
Austin, Bexar and Travis Green Parties
Bexar Grotto
Boerne Together
Bulverde Neighborhood Alliance
Bulverde Neighbors for Clean Water
Cibolo Center for Conservation
Citizens for the Protection of Cibolo Creek
Comal County Conservation Alliance
Environment Texas
First Universalist Unitarian Church of SA
Friends of Canyon Lake
Friends of Dry Comal Creek
Friends of Government Canyon
Fuerza Unida
Green Society of UTSA
Guadalupe River Road Alliance
Guardians of Lick Creek
Headwaters at Incarnate Word
Helotes Heritage Association
Hill Country Alliance
Kendall County Well Owners Association
Kinney County Ground Zero
Leon Springs Business Association
Native Plant Society of Texas – SA
Northwest Interstate Coalition of Neighborhoods
Pedernales River Alliance – Gillespie Co
Preserve Castroville
Preserve Lake Dunlop Association
Preserve Our Hill Country Environment
RiverAid San Antonio
San Antonio Audubon Society
San Antonio Conservation Society
San Geronimo Valley Alliance
San Marcos Greenbelt Alliance
San Marcos River Foundation
Save Barton Creek Association
Save Our Springs Alliance
Scenic Loop/Boerne Stage Alliance
Securing a Future Environment
SEED Coalition
Signal Hill Area Alliance
Sisters of the Divine Providence
Solar San Antonio
Texas Cave Management Association
Trinity Edwards Spring Protection Assoc
Water Aid – Texas State University
Wildlife Rescue & Rehabilitation
Wimberley Valley Watershed Association

PO Box 15618
San Antonio, Texas 78212
(210) 320-6294

January 29, 2024

Texas Commission on Environmental Quality
Office of the Chief Clerk, MC 105
P.O. Box 13087
Austin, Texas 78711-3087

Submitted electronically at http://www14.tceq.texas.gov/epic/eComment/

Re: Revised Comments and Contested Case Hearing Request Regarding Blizexas, LLC proposed Texas Land Application Permit (TLAP) No. WQ0016111001

Please accept the revised attached comments on behalf of the fifty-seven member groups of the Greater Edwards Aquifer Alliance.

1.0 Background
Blizexas, LLC, 258 Union Avenue, Los Gatos, California 95032, has applied to the Texas Commission on Environmental Quality (TCEQ) for a new permit, proposed TCEQ Permit No. WQ0016111001, to authorize the disposal of treated domestic wastewater at a daily average flow not to exceed 12,000 gallons per day via subsurface drip irrigation system with a minimum area of 2.75 acres of public access land.

The wastewater treatment plant would service a proposed 5000-seat amphitheater, the Fitzhugh Music Venue. The treatment facility and disposal site would be located approximately 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road, in Hays County, Texas 78737. The proposed wastewater treatment facility and disposal site would be located in the drainage basin of Barton Creek in Segment No. 1430 of the Colorado River Basin, approximately 1/2 mile from Barton Creek. The proposed development site is located within the Edwards Aquifer Contributing Zone (EACZ).

2.0 Greater Edwards Aquifer Alliance (GEAA)
GEAA is a 501(c)(3) nonprofit organization that promotes effective broad-based advocacy for the protection and preservation of the Edwards and Trinity Aquifers, their springs, watersheds, and the Texas Hill Country that sustains them. GEAA has multiple members who would be adversely affected by the permit application of Blizexas LLC. GEAA's members have serious concerns regarding the permit application, relating to the degradation of Barton Creek, the Edwards Aquifer, and area water wells that will likely occur with the irrigation of treated sewage and wastewater/stormwater runoff at the proposed site. We therefore recommend that the Fitzhugh Music Venue wastewater permit be denied, for the reasons presented in these comments.

3.0 Specific Concerns Regarding the Permit Application
Under the federal Clean Water Act, TCEQ is charged with maintaining the quality of our state's waters and protecting their existing uses. The Fitzhugh Music Venue as currently proposed would likely degrade Barton Creek and local groundwater quality in violation of the Clean Water Act and state law, through both treated sewage and stormwater runoff.

3.1 Wastewater Concerns
The draft wastewater permit issued by TCEQ does not require Nitrogen or Phosphorous removal and is extremely lax, especially given the environmentally-sensitive nature of the area, within the EACZ. Further, there are numerous karst features in the area. Several of these karst features are at a lower elevation than the proposed amphitheater and consist of sinkholes and springs connected to the Middle Trinity Aquifer. There are at least four properties in this area with multiple previously identified karst features, all located within a half mile of the proposed development and as far as 120 feet below the elevation of the developer's proposed treated sewage irrigation fields (Figures 1 & 2). Across these 4 properties, 20 known kart features (sinkholes, seeps, and springs) have been identified as well as multiple possible karst features requiring further examination.

The Middle Trinity Aquifer provides the sole source of water for many landowners in this area. Furthermore, pollution of the Middle Trinity Aquifer by the wastewater runoff or combined stormwater/wastewater runoff could also affect water wells some distance away from the proposed development. This portion of the Middle Trinity Aquifer extends not only throughout western Hays County but also into Travis, Blanco, and Comal Counties. In a recent Middle Trinity Aquifer dye tracing study[1] in the adjacent Onion Creek watershed, dye traveled over 5 miles from the injection site in a matter of days, demonstrating the interconnected nature of the Middle Trinity Aquifer segments.

[1] https://bseacd.org/uploads/Upper-Onion-trace-memo_05182018.pdf

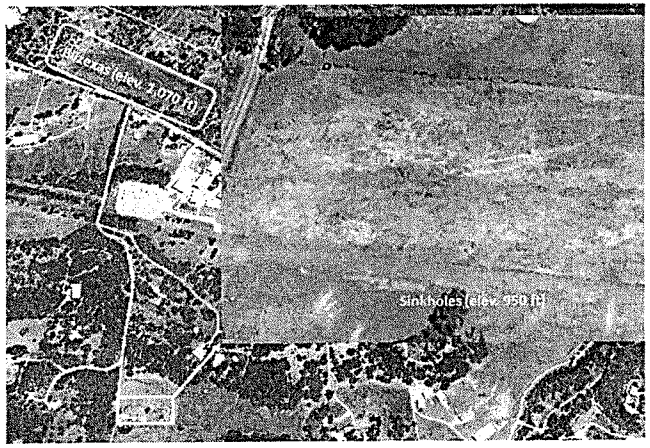


Fig. 1: Four sinkholes (Karst features) are shown circled in red in this overhead view, close to the proposed amphitheater site. Note the driveway on the left that would facilitate wastewater/stormwater flow from the amphitheater to the sinkholes and into the Middle Trinity Aquifer

Fig. 2: These springs bubble up from the Middle Trinity Aquifer on a Fitzhugh-area landowner's property, close to the proposed amphitheater site.

Given the direct path of surface pollutants - as constituents of both stormwater and wastewater runoff - to groundwater/drinking water, one might expect a tight permit with limits set for the nutrients Nitrogen and Phosphorous. Yet the draft permit contains no such limits. Nitrogen and Phosphorous are known to cause eutrophication of waterways, which threatens aquatic life. Barton Creek is already under nutrient stress in this area, with significant eutrophication present, especially during warm weather months (Fig. 3).

Fig 3: Barton Creek ½ mile from the proposed development site already suffers from eutrophication

The draft permit limits of 20 mg/l for both Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) are also very lax and would result in pollution of Barton Creek and the Middle Trinity Aquifer during saturation/runoff conditions. Most wastewater permits currently being issued in close proximity to a waterway within the EACZ stipulate a maximum limit of 5 mg/l for both TSS and BOD, even on TLAP permits issued for locations not as environmentally-sensitive as where the Fitzhugh Music Venue would be located (such as the nearby Headwaters development TLAP, WQ0014587001). The draft permit also has no requirement for *E. coli* testing/limits, which needs to be added to the draft permit to protect public safety.

Aside from concerns over pollutant limits, the layout of the proposed Fitzhugh Music Venue itself is also problematic, from a wastewater standpoint. The developer has proposed 6 relatively small (roughly ½ acre each) effluent drip fields comprising a total of 2.75 acres. Each TLAP field would be surrounded by impervious cover (Fig. 4). This means that even light precipitation would cause runoff of wastewater that could threaten not only Barton Creek but surrounding properties as well.

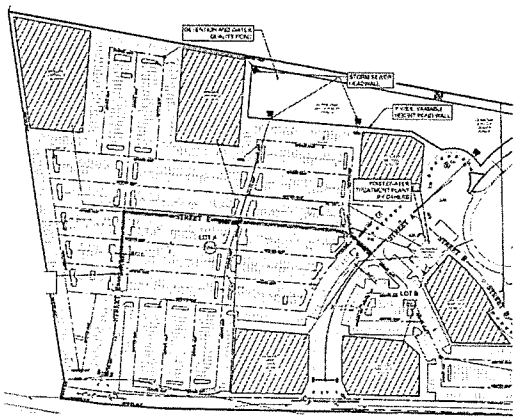


Fig. 4: Fitzhugh Music Venue: diagonal lines show 6 small TLAP fields surrounded by impervious cover

As a bare minimum, GEAA recommends a 5-5-2-0.5 permit for the Fitzhugh Music Venue wastewater treatment plant: 5 mg/l TSS, 5 mg/l BOD, 2 mg/l Ammonium Nitrate, and 0.5 mg/l Phosphorous, rather than the very lax 20/20 permit levels for TSS/BOD that were given in the draft permit (with no Nitrogen or Phosphorous limits).

3.2 Stormwater/Impervious Cover Concerns

While the lax draft Fitzhugh Music Venue wastewater permit is concerning, perhaps an even bigger environmental issue is the high amount of impervious cover the developer has proposed, 66.45% (Fig. 5). A heavily paved development with high impervious cover such as what is proposed would be more typical in an urban setting than in a rural area with an important contributing stream (Barton Creek) nearby.

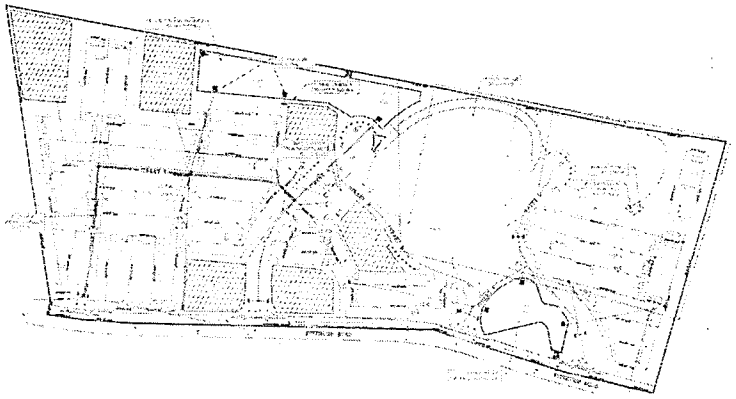


Fig. 5: Fitzhugh Music Venue's area is mostly impervious parking spaces, asphalt driveways, and concrete

The high amount of impervious cover poses a threat to both groundwater and surface water quality and is inconsistent with current land uses in this rural area of Hays County. The City of Austin Extra Territorial Jurisdiction (ETJ), which is located less than a mile from the proposed development site, follows the Save Our Springs (SOS) Ordinance, which stipulates maximum impervious cover limits of 20% in the EACZ. The Dripping Springs ETJ, also located less than a mile from the proposed development site, places a 35% impervious cover restriction in the EACZ. These limits are in place not only to protect nearby Barton Creek, but also to protect the Edwards Aquifer and Trinity Aquifer that supply drinking water to area well-owners, residents, and businesses. There is no other reliable source of drinking water in this area besides groundwater.

While the impervious cover percent is certainly too high for this area, the type of impervious cover is even more troubling. Most of the impervious cover is allocated for the 1,823 parking spaces in the proposed sprawling parking lot. These parking spaces would be subject to auto pollutants leaking from parked vehicles; pollutants including engine oil, gasoline, power steering fluid, brake fluid, heavy metals from car batteries, and tar-based sealants that protect parking lots and asphalt driveways. The applicant also plans to construct asphalt driveways, fire access roads, and turn lanes into and out of the venue. We are troubled by the extensive use of asphalt, a material known to impair water quality, as part of the developer's plan.

3.3 Stormwater Detention Concerns

The potential construction phase of this project is also of great concern, especially given the 150-foot elevation difference between the development site and nearby Barton Creek, just ½ mile away and down slope. There are legitimate concerns that the temporary erosion and sedimentation control facilities proposed by the developer will not be adequate to prevent pollution of Barton Creek during the construction phase. The addition of turn lanes on Fitzhugh Road, while certainly necessary for a development of this size, will just add more construction debris and impervious cover to a development that exceeds impervious cover limits enforced by the contiguous cities of Austin and Dripping Springs.

Once construction is completed, the developer proposes two batch detention ponds as the sole means of maintaining water quality for this development. Batch detention ponds can be effective for removing total suspended solids (TSS); however, they are less effective at removing fluid pollutants such as oil and gasoline and wastewater nutrients such as Nitrogen and Phosphorous that may not be absorbed within a land application irrigation field. Further, these batch detention ponds would also require significant maintenance for a 5000-seat concert venue that is regularly hosting concert events, due to the excessive amounts of trash and floatable debris generated during these events. If these batch detention ponds aren't properly maintained, solid pollutants in addition to fluid pollutants could find their way into Barton Creek and local groundwater.

During the past eighteen years, we have seen numerous stormwater detention plans that were never fully implemented or that failed to function properly coupled with a failure on the part of TCEQ staff to make sure approved plans were adhered to and functional through follow-up inspections. Given the budgetary and staff shortages of this agency, we urge caution in approving high maintenance plans such as this one.

3.4 Combined Wastewater/Stormwater Concerns

Taken together, the individual wastewater concerns and stormwater concerns combine to create a synergistic, polluting mess; saturated TLAP fields would result from the fact that the developer is proposing the absolute minimum irrigation area to meet TCEQ requirements (2.75 acres), with no "buffer" area allocated. On top of this, the soil in this part of Central Texas is thin and predominantly clay, the least absorbent soil type. As soon as the 6 proposed TLAP fields become saturated, they would in effect become additional impervious cover, increasing the impervious cover percentage from 66.45% to 75%. Even with light rainfall, the saturated TLAP fields would combine their wastewater runoff with stormwater runoff from the parking lot, driveways, concrete venue itself, and other impervious surfaces. This combined flow is supposed to be collected by just two batch detention ponds.

Yet Fig. 6 below shows the problem with this approach. The property consists of three separate drainage basins, shown as E1, E2, and E3 below. The two bold rectangles show the approximate locations of the proposed batch detention ponds that are supposed to collect the combined wastewater/stormwater runoff. Basin E1 drains approximately 30% of its area to the left of the first detention pond, sending runoff downhill to Barton Creek. Basin E2 has flow from left to right but also from top to bottom of the diagram; these competing directions will combine basin flow into one stream, much of which will likely miss the second batch detention pond. And the third basin (E3) has no batch detention pond to collect runoff, assuring that this runoff from Basin E3 will also end up in Barton Creek.

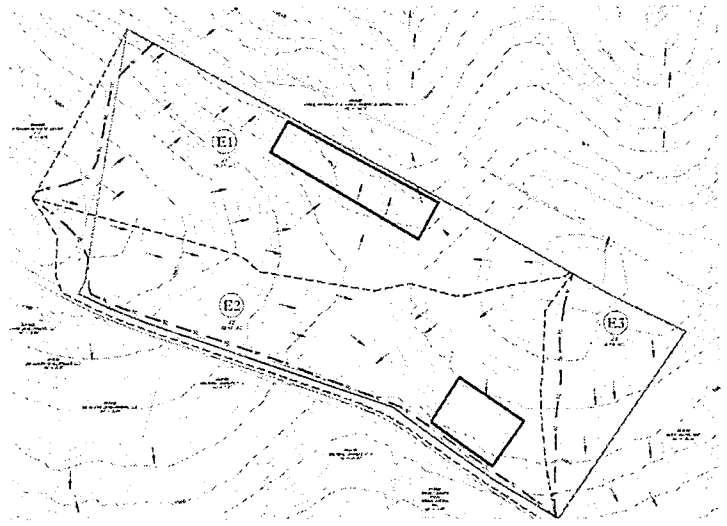


Fig. 6: Drainage diagram shows roughly half of the combined wastewater/stormwater runoff would miss the two batch detention ponds and wind up in Barton Creek

Because the entire development is in the Barton Creek watershed, there's nowhere else for the runoff that misses the batch detention ponds to go. Given the location and size of the batch detention ponds shown in Fig. 4 on the previous page, roughly half of the runoff will miss the batch detention ponds and wind up in Barton Creek.

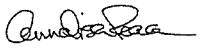
One might ask why there isn't a third batch detention pond proposed by the developer, or why the two detention ponds shown aren't larger, to collect more wastewater/stormwater runoff and thereby reduce the amount of pollutants introduced into Barton Creek. The answer is that between the large 5000-seat amphitheater, the necessary driveways, and the 1,823 parking spaces, there simply isn't any additional room for larger batch detention ponds or more detention ponds. But this is a terrible reason to justify polluting Barton Creek and surrounding properties.

3.0 Conclusions and Recommendations

In summary, a 5000-seat amphitheater and all of the wastewater and stormwater it would generate is ill-suited for the environmentally-sensitive nature of the Fitzhugh area. Existing development in this area respects the proximity to Barton Creek and location over the EACZ and consists predominantly of single-family homes on one acre plus lots, with On-Site Septic Facilities (OSSFs) for wastewater. Dropping in a massive amphitheater with 2/3 impervious cover and undersized TLAP fields is not only inconsistent with existing land uses in this area but, will likely lead to significant surface water and groundwater contamination. We urge TCEQ to reject the Blizexas LLC wastewater permit application in its entirety.

Thank you for the opportunity to submit these comments.

Respectfully,



Annalisa Peace
Executive Director
Greater Edwards Aquifer Alliance

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Tuesday, November 29, 2022 2:53 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

RFR

From: accounts@gavia.us <accounts@gavia.us>
Sent: Tuesday, November 29, 2022 2:28 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: MARK PURCELL

EMAIL: accounts@gavia.us

COMPANY:

ADDRESS: 12600 HILL COUNTRY BLVD STE R-130 #171
AUSTIN TX 78738-6723

PHONE: 5122538365

FAX:

COMMENTS: As a local resident, I am very concerned with the impact created by the proposed concert venue and believe this location is not well suited for such a venue. I have three chief concerns: 1. Light and noise pollution A venue like this with 6-8 events a year would be reasonable but we're talking about over 100 events/shows per year. Why are we allowing a business to create that level of negative impact on local residents? We can already see and hear LT football games, so a venue that is larger and closer in a semi-rural area will have a significant detrimental impact in

terms of noise and light. Please do not approve this permit on those grounds alone. 2. Traffic We are already under such traffic pressure in the area, and this venue will undeniably add significantly to the challenges multiple times a week. A chicken lane on HPR will not suffice to manage the volume, and Crumley/Fitzhugh are already challenging in terms of congestion and safety. Add overflow parking to the mix and it's going to be unbearable. 3. Negative environmental impact We moved to this area specifically because of its proximity to the Shield and Purior Ranches (both of which are under conservation easement). They have ensured that at least part of this landscape will be preserved and invested heavily to do so. Now, a venue with zero interest in honoring that investment plops down in the middle of it? Whoever is behind this project seemingly did not research the area or (worse) has no concern for its history can create this level of negative environmental impact. I am not anti-development and actually like outdoor theaters but believe strongly this project is ill-suited for this location. Please reconsider approving this permit and help preserve the beauty of this part of the hill country. Thank you, Mark Purcell Deer Creek Ranch

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Wednesday, March 26, 2025 1:58 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: ejreynoldstx@gmail.com <ejreynoldstx@gmail.com>
Sent: Wednesday, March 26, 2025 11:26 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Edward J Reynolds

EMAIL: ejreynoldstx@gmail.com

COMPANY:

ADDRESS: 13104 Wells Fargo Trl
Austin, TX 78737

PHONE: 5125653470

FAX:

COMMENTS: I request a contested hearing on this topic. It was made abundantly clear in a prior meeting that TCEQ was unaware of the type and location of the leach fields in the proposal. Coupled with the amount of impermeable surface at the propose site, these fields (spread across the parking surfaces) would almost certainly lead to effluent overflow during a serious rain. All that would flow downhill straight into Barton Creek.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 2:03 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: ejreynoldstx@gmail.com <ejreynoldstx@gmail.com>
Sent: Monday, January 29, 2024 9:44 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MR Edward J Reynolds

EMAIL: ejreynoldstx@gmail.com

COMPANY:

ADDRESS: 13104 WELLS FARGO TRL
AUSTIN TX 78737-9587

PHONE: 5125653470

FAX:

COMMENTS: My primary residence is at 13104 Wells Fargo Trl, about 2 miles from the proposed venue. I am very concerned about the potential for groundwater and surface water contamination, as well as potential impact to the aquifer. I am also quite concerned about potential odor from the site's waste processing facility. Barton Creek is directly downhill from the proposed location. During wet periods, there is significant probability that waste will overflow from the facility and flow into Barton Creek. Also, any potential failure in the system could cause leakage of contaminants into groundwater and the aquifer, including nitrates, bacteria and even viruses. We all operate septic systems, in this area, but we aren't building systems to accommodate 5,000 people. I have personally experienced mistakes in water delivery

and waste systems, even in residential construction. Blizexas has announced plans to pump up to 12,000 gallons per day from a well on the site of this property, to operate the wastewater treatment system. This is an order of magnitude higher than any other system currently in the area, drastically increasing the chances of problems in both delivery and waste. Now, to delivery. A well capable of delivering this amount of water daily will most certainly be a drain on our aquifers. The Trinity aquifer is now at its lowest level on record and springs fed by it are drying up and / or operating at less than 50% of their prior rates. Now, we want to grant a permit to this company to pump 12,000 gals per day for wastewater purposes? What will that do to the wells of residential and small commercial businesses in the area that already have wells? I know many neighboring homes in the Dripping Springs area have wells that have already gone dry, forcing residents to drill much deeper to hit water. And, if the company elects to truck the water in, what will that do to the feeder roads, designed for light traffic? This all seems very wasteful and, potentially having a negative impact on current residents' and businesses water usage.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Friday, January 19, 2024 9:36 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: Karen_kofod@hotmail.com <Karen_kofod@hotmail.com>
Sent: Thursday, January 18, 2024 4:59 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Karen Richards

EMAIL: Karen_kofod@hotmail.com

COMPANY:

ADDRESS: 206 SUNDANCE TRL
DRIPPING SPRINGS TX 78620-2729

PHONE: 4155966066

FAX:

COMMENTS: I would like to request a contested case hearing

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 1:32 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: DR@OPTIMALSOUND.NET <DR@OPTIMALSOUND.NET>
Sent: Sunday, January 28, 2024 1:10 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: David Roach

EMAIL: DR@OPTIMALSOUND.NET

COMPANY: Optimal Sound LLC

ADDRESS: 12900 TRAIL DRIVER
AUSTIN TX 78737-9538

PHONE: 5125879067

FAX:

COMMENTS: My house is at 12900 Trail Driver Street, Austin, TX 78737, almost exactly 2 miles from the proposed concert venue treatment facility. When this venue is active, I will be able to both see and hear the noise and light pollution from the hilltop location of my house, and it is quite possible that it will affect aquifer levels that would result in my well going dry. I write to state my objections to the proposed TLAP Permit No. WQ0016111001 to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersections of Crumley Ranch Road, Trautwein Road, and Fitzhugh Road in Hays County, Texas. Its disposal area is located in the Edwards Aquifer Contributing Zone

above Barton Creek. I have concerns about the Draft Permit of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001, including the impacts of disposal and runoff on: Groundwater and surface water contamination; Impact on local wildlife Impact on aquifers, and Waste odors. Disposal and runoff I have grave concerns about the elevations of the proposed site, which is directly uphill from Barton Creek where it intersects with Fitzhugh Road. The difference in elevation from the treatment facility to Barton Creek is over 140 feet, almost all downhill. In addition, the properties to the north of the proposed site are also downhill and will almost certainly be affected by runoff. Other irrigation fields in the area have experienced numerous problems, including: Poor soils unable to absorb large amounts of water; Runoff of effluent from saturated irrigation fields; and Insufficient storage capacity to store effluent when soils are saturated – i.e. 3 days of storage noted in draft permit may not be sufficient for the location, especially in situations such as the recent heavy rains for many days at a time. A number of similarly-permitted facilities in Hays County have occasionally failed, often resultings in untreated wastewater flowing into local streams. I am aware of a number of cases where sanitation at music venues became overwhelmed in wet weather, in some cases causing a spread of disease. What safeguards can be put in place to ensure that this can't occur? Surface water I am concerned about the potential impact of the site's operations and the proposed land application of wastewater next to Barton Creek and the waters running into Barton Creek. The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life. What plans are in place to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on Barton Creek, especially given that Barton Creek is almost directly downhill of the site? I have concerns about the amount of wastewater that will be generated at the venue. There is limited information about the number of concerts per week to be held at Rockingwall. It seems that information must be made available to determine critical technical details accurately. The occupancy/capacity of the venue is also critical to know. I have concerns about runoff, locations of the drip fields, and size of the property relative to the requirements to properly manage the TLAP permit. Blizexas should be required to disclose planned locations for parking lots and total amount of impervious cover from all impervious surfaces to ensure that engineering assumptions are correct under the draft permit. Has TCEQ conducted a site visit to determine if the property is large enough to accommodate all requirements? If not, what is TCEQ's basis for believing that the proposed TLAP facility will not harm Barton Creek or adjacent properties? Groundwater I have concerns regarding the placement of waste within the Edwards Aquifer Contributing Zone. Blizexas has announced plans to pump up to 12,000 gallons per day from a well on the site of this property, to operate the wastewater treatment system. The aquifers in this area are already very overtaxed, and the Middle Trinity aquifer has no active recharge zone. If this well taps into the middle Trinity (which provides water for my property), then it will up this ancient water very quickly. Regardless of which aquifer supplies the well, it has a very high potential to cause the wells in the area to go dry very quickly, which is already a big problem in this area. The thin soil characteristic of the disposal area poses a potential risk to not only the Edwards Aquifer but also the Trinity Aquifer, as many neighboring property owners rely on the Trinity as their sole source of water for domestic and commercial use. The soil in the proposed treatment system is very thin, usually less than 1 foot above the limestone bedrock in the area. Therefore it has little to no capacity to absorb the 12,000 gallons of effluent being produced daily by the wastewater facility. It seems that a proposed groundwater well is identified in the application. What is the capacity of the well? Is the well currently permitted with the Hays Trinity Groundwater Conservation District? Is there enough potential water production to maintain grass production as required under the TLAP permit? And is this enough water for fire-control purposes? Another possible source of water to run the wastewater facility proposed by Blizexas is to truck in 12,000 gallons of water per day, This works out to 50 tons of water per day being carried over the substandard roads leading to the proposed venue, and has the potential to severely damage these roads and bridges in a short period of time. As the road damage increases, this will likely limit the ability to supply enough water using this method, and the wastewater system will likely become inoperable as a result. I request that Blizexas be required to submit an Edwards Aquifer Contributing Zone plan, if it hasn't already done so. Odor Blizexas only proposes buffer zones for odor control 150 feet from the property line. Can TCEQ ensure that Blizexas's sludge solids management plan is sufficient to protect neighboring properties from odors from the wastewater system? Also, is there adequate capacity for Wastewater Residuals Management to handle offsite disposal under their current permit? Wildlife The plans for the proposed facility show an amphitheater with the stage facing north within a few hundred feet of Shield Ranch, which is a well-known wildlife conservation area. The noise from amplified hip-hop and rock music for multiple nights each week will almost certainly drive the wildlife away from this area and prevent their return. While this is not directly related to the wastewater treatment system, it is certainly a huge factor in the Environmental Quality of the area, and should be considered by the Commission on Environmental Quality, as a

significant reduction in wildlife will most definitely result in multiple environmental impacts. In addition, the powerful public address system used for such concerts will result in considerable noise pollution throughout the area, especially up and down the valley surrounding nearby Barton Creek. Contested Hearing If this application is indeed approved by the TCEQ, then I am requesting a contested hearing as a result. Sincerely yours, David Roach 12900 Trail Driver St. Austin, TX 78737 512-587-9067

(3)

TCEQ Registration Form

November 29, 2022

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: DAVID ROACH

Mailing Address: 12900 TRAIL DRIVER

Physical Address (if different): _____

City/State: AUSTIN TX **Zip:** 78737

This information is subject to public disclosure under the Texas Public Information Act

Email: DR@OPTIMALSOUND.NET

Phone Number: (512) 587 9067

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☒ No

  If yes, which one? _____

☒ **Please add me to the mailing list.**

☒ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Monday, November 28, 2022 10:55 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Comments to TCEQ-DTR.docx

From: DR@OPTIMALSOUND.NET <DR@OPTIMALSOUND.NET>
Sent: Friday, November 25, 2022 4:19 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: David Roach

EMAIL: DR@OPTIMALSOUND.NET

COMPANY: Optimal Sound LLC

ADDRESS: 12900 TRAIL DRIVER
AUSTIN TX 78737-9538

PHONE: 5125879067

FAX:

COMMENTS: Please see attached MS Word document

Comments on **Blizexas (Rockingwall) TLAP Permit** WQ0016111001
–In response to TCEQ Draft Permit of 6/15/2022

- I live at 12900 Trail Driver Street, Austin, TX 78737, almost exactly 2 miles from the proposed treatment facility.

- I write to state my objections to the proposed TLAP Permit No. WQ0016111001 to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road in Hays County, Texas, 78737. Its disposal area is located in the Edwards Aquifer Contributing Zone near Barton Creek.

- I have concerns about the Draft Permit of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001, including the impacts of disposal and runoff on:
    - Groundwater and surface water contamination; and
    - Waste odors.

- I have grave concerns about the elevations of the proposed site, which is directly uphill from Barton Creek where it intersects with Fitzhugh Road. The difference in elevation from the treatment facility to Barton Creek is over 140 feet, almost all downhill. In addition, the properties to the north of the proposed site are also downhill and will almost certainly be affected by runoff.

Disposal and runoff

- Other irrigation fields in the area have experienced numerous problems, including:
    - Poor soils unable to absorb large amounts of water;
    - Runoff of effluent from saturated irrigation fields; and
    - Insufficient storage capacity to store effluent when soils are saturated – i.e. 3 days of storage noted in draft permit may not be sufficient for the location.
- I am aware of a number of cases where sanitation at music venues became overwhelmed in wet weather, in some cases causing a spread of disease. What safeguards can be put in place to ensure that this can't occur?

Surface water

- I am concerned about the potential impact of the site's operations and the proposed land application of wastewater next to Barton Creek and the waters running into Barton Creek.

- The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life.
- What plans are in place to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on Barton Creek, especially given that Barton Creek is almost directly downhill of the site?

- I have concerns about the amount of wastewater that will be generated at the venue. There is limited information about the number of concerts per week to be held at Rockingwall. It seems that information must be made available to determine critical technical details accurately. The occupancy/capacity of the venue is also critical to know.

- I have concerns about runoff, locations of the drip fields, and size of the property relative to the requirements to properly manage the TLAP permit.

    - Rockingwall should be required to disclose planned locations for parking lots and total amount of impervious cover from all impervious surfaces to ensure that engineering assumptions are correct under the draft permit.
    - Has TCEQ conducted a site visit to determine if the property is large enough to accommodate all requirements? If not, what is TCEQ's basis for believing that the proposed TLAP facility will not harm Barton Creek or adjacent properties?

Groundwater

- I have concerns regarding the placement of waste within the Edwards Aquifer Contributing Zone.

    - The thin soil characteristic of the disposal area poses a potential risk to not only the Edwards Aquifer but also the Trinity Aquifer, as many neighboring property owners rely on the Trinity as their sole source of water for domestic and commercial use.
    - **I request that the Rockingwall amphitheater submit an Edwards Aquifer Contributing Zone plan**, if it hasn't already done so.
    - It seems that a proposed groundwater well is identified in the application. What is the capacity of the well? Is the well currently permitted with the Hays Trinity Groundwater Conservation District? Is there enough potential water production to maintain grass production as required under the TLAP permit?

Odor

- Rockingwall only proposes buffer zones for odor control 150 feet from the property line. Can TCEQ ensure that Rockingwall's sludge solids management plan is sufficient to protect neighboring properties from odors from the wastewater system? Also, is there adequate capacity for Wastewater Residuals Management to handle offsite disposal under their current permit?

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Wednesday, April 2, 2025 4:40 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: 2025.04.02. Blizexas. SOS Contested Case Hearing Request.pdf

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: victoria@sosalliance.org <victoria@sosalliance.org>
Sent: Wednesday, April 2, 2025 4:38 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Victoria Rose

EMAIL: victoria@sosalliance.org

COMPANY: Save Our Springs

ADDRESS: 3201 Menchaca
Austin, TX 78704

PHONE: 5124772320

FAX:

COMMENTS: Please find SOS's contested case hearing request in the attached PDF.

Laurie Gharis
Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087 – MC 105
Austin, Texas 787011 – 3087

April 2, 2025

Via: Online Submission Form

Re: Request for Contested Case Hearing on the Application and Draft Permit of Blizexas, LLC for New TLAP Permit No. WQ0016111001

Dear Ms. Gharis:

Save Our Springs Alliance (SOS) requests a contested case hearing on the application and draft permit of Blizexas, LLC for new TLAP Permit No. WQ0016111001.

I. Background.

Blizexas, LLC has applied for new Texas Land Application Permit No. WQ0016111001 to dispose 12,000 gallons per day of treated sewage via subsurface irrigation on 2.75 acres near Barton Creek, a significant recharge feature for the Edwards Aquifer. SOS and many others submitted comments asking that the draft permit not be approved due to the unacceptably high risk of environmental harm and failure to adhere to all applicable TCEQ rules, but TCEQ's Executive Director continues to recommend issuance of the draft permit.

II. Save Our Springs Alliance Meets the Requirements to be Considered an "Affected Person" in Order to Contest the Draft Permit.

SOS meets the requirements set out in 30 T.A.C. § 55.205 for a group or association to be considered an "affected person" for the purposes of requesting a contested case hearing.

SOS is a non-profit conservation organization located in Austin, Texas that works to "protect the Edwards Aquifer, its springs and contributing streams, and the natural and cultural heritage of the Hill Country region and its watersheds." SOS's mission encompasses the protection of Barton Creek, its watershed, and the groundwater that will be harmed as a result of the draft permit. SOS and its members regularly work to protect Barton Creek through research and advocacy and regularly educate the public about this special waterway through hikes and snorkel tours. SOS routinely participates in the wastewater permitting process and submitted timely comments on the draft permit.

SOS has members who would otherwise have standing to request a contested case hearing for the Draft Permit in their own right. Among these is SOS member Sharon Thiede.

Sharon Thiede is a SOS member who owns real property and lives at 15211 Fitzhugh Road, Austin, Texas 78736 which less than one mile from the proposed facilities associated with the draft permit. Ms. Thiede's economic, property, aesthetic, recreation, and personal health and safety interests will be harmed by the draft permit. Ms. Thiede is concerned about odors from the

wastewater facilities, contamination of groundwater and her well, pollution in Barton Creek, and negative impacts to her property values. Ms. Thiede is also concerned about the nearby environment and the impacts to golden-cheeked warblers and monarch butterflies. She is also concerned about trees being cut down for the construction of the wastewater facilities. Due to her close proximity to the facilities associated with the draft permit and particularized concerns, Ms. Thiede will be impacted by the draft permit in a manner different from the general public. Ms. Thiede's phone number is 832-755-8504, and her email address is smthiede23@gmail.com.

For these reasons, SOS is an "affected person" entitled to a contested case hearing on the application and Draft Permit. 30 T.A.C. § 55.205.

III. The TCEQ Executive Director Did Not Sufficiently Address the Issues Raised by SOS, and SOS Requests a Contested Case Hearing on These Issues.

SOS remains concerned about the impacts of the draft permit. The following relevant and material issues were timely raised by SOS during the comment period for the draft permit and were not sufficiently addressed by the TCEQ Executive Director ("ED"). SOS reiterates the concerns and comments raised during the comment period as the basis for this request for a contested case hearing, and to further show that the ED did not adequately address SOS's comments and that factual and legal disputes related to the draft permit remain.

These issues were raised by SOS in comments and were not adequately addressed in the ED's Response to Comments ("RTC"):

1. Whether the draft permit is protective of surface water quality in Barton Creek. Comments 1, 12
2. Whether the draft permit is protective of groundwater quality. Comments 3, 8, 10, 12
3. Whether the draft permit is protective of wildlife. Comments 4, 6, 12
4. Whether the soils and geology of the irrigation fields are adequate. Comments 7, 10
5. Whether the application is administratively complete, contains all required information, and contains accurate information. Comment 9
6. Whether the draft permit contains sufficient monitoring requirements. Comment 11
7. Whether the effluent limits in the draft permit are adequate. Comment 12
8. Whether the draft permit complies with TCEQ's regionalization policy. Comment 14
9. Whether public notice was adequate. Comment 15

The ED's responses to SOS's comments were inadequate because the responses did nothing more than recite the regulatory requirements, recite the parameters of the draft permit, and/or conclude without evidence or explanation that the draft permit met applicable requirements.

IV. Conclusion.

SOS respectfully requests a contested case hearing on the application and draft permit of Blizexas, LLC for new TLAP Permit No. WQ0016111001. SOS requests that the TCEQ Commissioners refer the case to the State Office of Administrative Hearings on the issues listed and discussed above.

Thank you for considering SOS's comments and concerns associated with the Application and Draft Permit and for considering SOS's Contested Case Hearing Request.

Please use the contact information below for all communications with SOS on this matter.

Sincerely,
/s/ Victoria Rose
Victoria Ann Rose
State Bar No. 24131088
victoria@sosalliance.org
z
Bill Bunch
State Bar No. 03342520
bill@sosalliance.org

Save Our Springs Alliance
3201 Menchaca Road
Austin, Texas 78704
Tel.: 512-477-2320
Fax: 512-477-6410

Attorneys for Save Our Springs Alliance

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 2:07 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: SOS Third Supplemental Comments on TLAP WQ001611101.pdf

From: victoria@sosalliance.org <victoria@sosalliance.org>
Sent: Monday, January 29, 2024 12:13 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Victoria Rose

EMAIL: victoria@sosalliance.org

COMPANY: Save Our Springs Alliance

ADDRESS: 4701 W GATE BLVD Suite D-401
AUSTIN TX 78745-1479

PHONE: 5124772320

FAX:

COMMENTS: Please find SOS's third supplemental comments in the attached PDF

Laurie Gharis
Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087 – MC 105
Austin, Texas 787011 – 3087

January 26, 2024

Via: Online Submission Form

RE: SOS's Third Supplemental Comments on Draft Permit and Application by Blizexas, LLC for Proposed TLAP Permit No. WQ0016111001

Dear Ms. Gharis:

These comments are submitted on behalf of Save Our Springs Alliance (SOS) regarding the Draft Permit and Application of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001. The following comments are intended to supplement the comments submitted by SOS on May 26, 2022, November 29, 2022, August 27, 2023 and address SOS's continued concerns about proposed TLAP Permit No. WQ0016111001. It is the position of SOS that issuance of this Draft Permit will result in unauthorized discharges into surface waters in the State of Texas, causing harm to Barton Creek and violating the Clean Water Act.

Blizexas, LLC ("the Applicant") has applied for a new land application permit, proposed TLAP Permit No. WQ0016111001 ("the Draft Permit"), to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road in Hays County, Texas, 78737. According to TCEQ's Edwards Aquifer Map Viewer, the disposal area is located in the Edwards Aquifer Contributing Zone and is located near Barton Creek.

SOS is concerned about the Applicant's use of smaller effluent drip fields to comprise the 2.75 total acres of irrigation fields since the smaller fields are surrounded by vast expanses of impervious cover. This design combined with the thin and rocky soils in the effluent drip fields means that even small rain events will result in runoff of wastewater and pollution of surface and groundwater. The Draft Permit cannot be issued as a TLAP, since it is certain that operations under the Draft Permit will lead to unauthorized discharges of wastewater into Barton Creek.

SOS is also concerned that the Draft Permit does not contain a limit on Total Phosphorus or Nitrogen, nor does the Draft Permit contain sufficient limits for Total Suspended Solids or Carbonaceous Biochemical Oxygen Demand. The harmful impacts of all of these wastewater constituents on waterways are well documented. There is no way that the vegetation in the proposed effluent drip fields will be able to take up all of the pollutants in the wastewater proposed by the Applicant, and it is certain that even small rain events will cause run off of the pollutants into surface water. In light of these facts, the Draft Permit cannot comply with the mandates of the Clean Water Act, TCEQ regulations, and the Texas Water Code, and the Draft Permit, if issued, must have more stringent effluent limits.

For the above reasons and for the reasons set out in SOS's May 26, 2022, November 29, 2022, and August 27, 2023 comments, SOS continues to oppose proposed TLAP Permit No. WQ0016111001 and asks that the Permit be denied in order to protect Barton Creek and nearby groundwater from harmful pollution, protect neighboring landowners from unabated nuisance odors, to protect Hill Country wildlife, and to protect the public from poorly designed and thought out wastewater treatment and disposal facilities. It is the understanding of SOS that none of the organization's comments or concerns have been addressed by the Applicant or TCEQ. If SOS's comments and concerns are not addressed and improvements are not made to the proposed TLAP, SOS will file a contested case hearing request to protect the Texas Hill Country from the environmental disasters that the TLAP, as proposed, will cause.

Thank you for considering SOS's comments and allowing us to express our concerns about the Draft Permit.

Sincerely,

Victoria Rose
Staff Attorney
Save Our Springs Alliance
4701 Westgate Blvd.
Bldg. D, Suite 401
Austin, Texas 78745
Tel.: 512-477-2320, ext. 6
Fax: 512-477-6410
victoria@sosalliance.org

Misty Botello

From:	PUBCOMMENT-OCC
Sent:	Thursday, August 24, 2023 3:13 PM
To:	PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject:	FW: Public comment on Permit Number WQ0016111001
Attachments:	SOS Second Supplemental Comments on TLAP WQ001611101.pdf

From: victoria@sosalliance.org <victoria@sosalliance.org>
Sent: Thursday, August 24, 2023 2:52 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Victoria Rose

EMAIL: victoria@sosalliance.org

COMPANY: Save Our Springs Alliance

ADDRESS: 4701 W GATE BLVD Ste. D-401
AUSTIN TX 78745-1479

PHONE: 5124772320

FAX:

COMMENTS: Please find Save Our Springs Alliance's second supplemental comments in the attached PDF.

Laurie Gharis
Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087 – MC 105
Austin, Texas 787011 – 3087

August 27, 2023

Via: Online Submission Form

RE: Draft Permit and Application by Blizexas, LLC for Proposed TLAP Permit No. WQ0016111001

Dear Ms. Gharis:

These comments are submitted on behalf of Save Our Springs Alliance (SOS) regarding the Draft Permit and Application of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001. The following comments are intended to supplement the comments submitted by SOS on May 26, 2022 and November 29, 2022 and address SOS's continued concern about proposed TLAP Permit No. WQ0016111001.

Blizexas, LLC ("the Applicant") has applied for a new land application permit, proposed TLAP Permit No. WQ0016111001 ("the Permit"), to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road in Hays County, Texas, 78737. According to TCEQ's Edwards Aquifer Map Viewer, the disposal area is located in the Edwards Aquifer Contributing Zone and is located near Barton Creek.[1]

The Application makes faulty assumptions in the calculations for the wastewater treatment system design. The peaking factor of one that is used as a basis for the wastewater treatment system design information in the Draft Permit assumes uniform flow into the treatment system despite the highly variable flow associated with entertainment venues and is not justified. The Application also assumes influent with a BOD of 540 mg/L, which is much higher than levels for influent that is considered "strong," but the Application provides no explanation to justify the assumption and deviation from the source that it vaguely cites to for support. More information is needed to assess whether any of the assumptions made in the calculations for the Application are reasonable including number of seats for the entertainment venue, number of employees, and whether there will be a restaurant, beverage, or lodging service associated with the event venue.

The Draft Permit and Application fails to comply with TCEQ's regionalization policy. Rocky Ranch and Headwaters, two permitted wastewater treatment and disposal systems, are within two miles of the treatment and disposal facility associated with the Draft Permit. While there are letters to the operators of the two facilities, here is no response to the letters to support the Applicant's assertion that the systems lack the capacity to treat the proposed wastewater. SOS asks that the Applicant comply with TCEQ's regionalization policy, a policy which TCEQ has

[1] Texas Commission on Environmental Quality, *Edwards Aquifer Map Viewer*, (last visited May 24, 2022) https://www.tceq.texas.gov/gis/edwards-viewer.html.

recognized as leading to more reliable wastewater treatment and disposal operations. In the spirit of creating a wastewater system that is reliable, SOS also asks that the Applicant make provisions to use a Class A or B operator instead of a Class C operator as operator experience is key to ensuring effluent quality and compliance with regulations when soils are saturated or frozen.

There are also several issues with the soils and suitability of the chosen site for a TLAP permit like the one that would be issued based on the Draft Permit. The soil at the site is shallow and parts of the site are described as a rock outcrop. The Application misleadingly equates total soil depth with refusal when describing the 5 test holes that were dug at the site and provided results that are inconsistent with published NRCS soils data for the site. The results of the test holes are indicative of restrictive horizons that are unsuitable for wastewater effluent disposal. NCRS soil data also classifies the site as being unsuitable for wastewater disposal. With the unsuitability of the soils for wastewater dispersal, SOS has concerns about whether the Application and Draft Permit provide for sufficient storage capacity. SOS also questions whether TCEQ has the authority to issue the Draft Permit under 30 T.A.C. Chapter 222 since based on the information in the Application and Draft Permit it is clear that the soil hydrologic absorption rate and crop/plant absorption rate will be exceeded. *See* 30 T.A.C. § 222.3 and 222.5.

The Application is missing key information and is incomplete. The application questions on storm and construction-phase runoff are not answered. The Application provides no basis for the estimated average daily flow rate in the permit. The Application also provides no explanation for the many assumptions made and liberties taken in the calculations throughout the Application.

For the above reasons and for the reasons set out in SOS's May 26, 2022 and November 29, 2022 comments, SOS continues to oppose proposed TLAP Permit No. WQ0016111001 and asks that the Permit be denied in order to protect Barton Creek and nearby groundwater from harmful pollution, protect neighboring landowners from unabated nuisance odors, to protect Hill Country wildlife, and to protect the public from poorly designed and thought out wastewater treatment and disposal facilities.

Thank you for considering SOS's comments and allowing us to express our concerns about the Draft Permit.

Sincerely,

Victoria Rose
Staff Attorney
Save Our Springs Alliance
4701 Westgate Blvd.
Bldg. D, Suite 401
Austin, Texas 78745
Tel.: 512-477-2320, ext. 6
Fax: 512-477-6410
victoria@sosalliance.org

Christina Bourque

From:	PUBCOMMENT-OCC
Sent:	Wednesday, November 30, 2022 9:40 AM
To:	PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject:	FW: Public comment on Permit Number WQ0016111001
Attachments:	SOS Supplemental Comments on TLAP WQ001611101.pdf

From: victoria@sosalliance.org <victoria@sosalliance.org>
Sent: Tuesday, November 29, 2022 3:48 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Victoria Rose

EMAIL: victoria@sosalliance.org

COMPANY: Save Our Springs Alliance

ADDRESS: 4701 W GATE BLVD Ste. D-401
AUSTIN TX 78745-1479

PHONE: 5124772320

FAX:

COMMENTS: Please see the attached PDF

Laurie Gharis
Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087 – MC 105
Austin, Texas 787011 – 3087

November 29, 2022

Via: Online Submission Form

RE: Draft Permit and Application by Blizexas, LLC for Proposed TLAP Permit No. WQ0016111001

Dear Ms. Gharis:

These comments are submitted on behalf of Save Our Springs Alliance (SOS) regarding the Draft Permit and Application of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001. The following comments are intended to supplement the comments submitted by SOS on May 26, 2022 and address SOS's continued concern about proposed TLAP Permit No. WQ0016111001.

Blizexas, LLC ("the Applicant") has applied for a new land application permit, proposed TLAP Permit No. WQ0016111001 ("the Permit"), to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road in Hays County, Texas, 78737. According to TCEQ's Edwards Aquifer Map Viewer, the disposal area is located in the Edwards Aquifer Contributing Zone and is located near Barton Creek.[1]

As an initial matter, SOS asks that TCEQ require the Applicant to apply with applicable notice requirements by republishing any required notices in Spanish to restart the public comment period. This will allow for a greater opportunity for public comment and involvement in the Permit and allow the nearby Spanish speaking community, including the families at Dripping Springs Elementary School, to participate in the permitting process. SOS also requests that the Applicant be required to provide any required notices to adjacent landowners that were not included or whose addresses were not correctly stated in the application.

Moreover, the application submitted by the Applicant for the Permit contains many errors that violate TCEQ requirements regarding TLAP applications, and TCEQ must require that these errors be remedied. These issues include (1) a failure to file an Edwards Aquifer Contributing Zone plan (2) the location of subsurface area drip dispersal system units less than 150 feet from the nearest property line, thereby violating TCEQ requirements to abate and control odor (3) a failure to identify all waterbodies that may be impacted by the Permit, including two nearby ponds (4) a failure to sign the Core Data form by a party with signatory authority and a failure to include the Applicant's street address (5) failure to provide original photographs of the subsurface area drip dispersal system units (6) and failure to publicly provide information on the

[1] Texas Commission on Environmental Quality, *Edwards Aquifer Map Viewer*, (last visited May 24, 2022) https://www.tceq.texas.gov/gis/edwards-viewer.html.

types and numbers of events and method of wastewater collection, factors that will directly impact operations under the Permit.

In addition to the violation of TCEQ's rules regarding notice requirements and the contents of TLAP applications, SOS is concerned that the Permit will harm the environment by allowing the unauthorized discharge of wastewater into nearby ground and surface water, failing to abate nuisance odors, and disrupting endangered species such as the Golden-cheeked Warbler. The amount of wastewater, application rate of wastewater, and the quality of the wastewater from the Permit will all contribute to the negative impacts on the environment.

The Permit is not protective of groundwater. SOS is concerned that the Applicant's property including the subsurface area drip dispersal system units and nearby affected land has recharge features and that the Edwards Aquifer and Trinity Aquifer will be negatively impacted by the Permit. The irrigation fields sit atop an area with karst features, thin soils that are not suitable for wastewater effluent disposal, and shallow groundwater that can easily be contaminated. It is not clear that Applicant is taking all necessary steps to protect groundwater from contamination. Given the likelihood of groundwater contamination, the Permit should include limits on nitrate and total nitrogen to protect ground and drinking water.

The Permit is not protective of surface water, specifically Barton Creek. The Permit is located in an environmentally sensitive area with unique geological features that make an unauthorized discharge into surface water due to a TLAP likely. Unauthorized discharges into waters of the state regularly occur as a result of the sensitive environmental features and mismanaged TLAPs in the Hill Country, damaging the downstream aquatic ecosystems. In this case, the downstream aquatic ecosystem is the beloved Barton Creek that is designated as having high aquatic life use. A large and growing body of scientific literature shows that the introduction of excess nutrients from wastewater in waterbodies like Barton Creek leads to degradation of water quality and impairment of waterbody uses in violation of TCEQ rules and the Federal Clean Water Act. Due to the thin soils and lack of clarity surrounding Applicant's plans to dispose of wastewater, there is a high risk for channelization and runoff of wastewater. Given the likelihood of unauthorized discharge, the Permit should also set limits on phosphorus of at least 20 micrograms per liter, or perhaps even lower to protect Barton Creek from nuisance algal blooms. TCEQ must also require the Applicant to have a plan to maintain grass on the subsurface area drip dispersal system units so that water can be properly absorbed.

The location of the subsurface area drip dispersal system units on the Applicant's property is concerning as the units are located close to the property boundaries. The proximity of the units to the property boundary will exacerbate the environmental concerns identified by SOS as well as violate TCEQ regulations on odor control. There is no indication in the application or Permit that the Applicant will be able to properly control odors associated with the generated waste. SOS is also concerned that the Applicant's property is too small to accommodate all of the necessary components to lawfully operate the Permit.

For the above reasons and for the reasons set out in SOS's May 26, 2022 comments, SOS continues to oppose proposed TLAP Permit No. WQ0016111001 and asks that the Permit be

denied in order to protect Barton Creek and nearby groundwater from harmful pollution, protect neighboring landowners from unabated nuisance odors, and to protect Hill Country wildlife.

Thank you for considering SOS's comments and allowing us to express our concerns about the Permit.

Sincerely,

Victoria Rose
Staff Attorney
Save Our Springs Alliance
4701 Westgate Blvd.
Bldg. D, Suite 401
Austin, Texas 78745
Tel.: 512-477-2320, ext. 6
Fax: 512-477-6410
victoria@sosalliance.org

Lori Rowe

From: PUBCOMMENT-OCC
Sent: Thursday, May 26, 2022 10:56 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: FINAL Comments and Request for Public Meeting for WQ0016111001.pdf

MWD
127674

PM

From: victoria@sosalliance.org <victoria@sosalliance.org>
Sent: Thursday, May 26, 2022 9:50 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Victoria Rose

EMAIL: victoria@sosalliance.org

COMPANY: Save Our Springs Alliance

ADDRESS: 4701 W GATE BLVD Ste. D-401
AUSTIN TX 78745-1479

PHONE: 5124772320

FAX:

COMMENTS: Please find our comments and request for public meeting in the attached PDF.

Laurie Gharis
Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087 – MC 105
Austin, Texas 787011 – 3087

May 26, 2022

Via: Online Submission Form

RE: Application of Blizexas, LLC for Proposed TLAP Permit No. WQ0016111001

Dear Ms. Gharis:

These comments are submitted on behalf of Save Our Springs Alliance (SOS) concerning the Application of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001. Save Our Springs Alliance requests a public meeting in response to the *Notice of Receipt of Application and Intent to Obtain Water Quality Permit for Proposed Permit No. WQ0016111001.*

Blizexas, LLC ("the Applicant") has applied for a new land application permit, proposed TLAP Permit No. WQ0016111001 ("the Permit"), to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road in Hays County, Texas, 78737. According to TCEQ's Edwards Aquifer Map Viewer, the disposal area is located in the Edwards Aquifer Contributing Zone and is located near Barton Creek.[1]

SOS is a non-profit conservation organization located in Austin, Texas that works to "protect the Edwards Aquifer, its springs and contributing streams, and the natural and cultural heritage of the Hill Country region and its watersheds."[2] SOS has members who live and play near the proposed disposal site, including the downstream areas of Barton Creek. SOS and its members will likely be harmed by the Permit through adverse odors, visual impacts, and pollution of Barton Creek, the Edwards Aquifer, and ultimately Barton Springs. Many of SOS's concerns with the Permit stem from the wastewater pollution that is likely to enter Barton Creek, the Edwards Aquifer, and Barton Springs as a result of unauthorized wastewater discharges that will occur as part of the Permit's operation.

While many Texas Land Application Permits do not allow for the discharge of wastewater, the practice of land applying treated effluent in the Texas Hill Country Region has and will continue to result in the unauthorized discharge of wastewater into surface water and groundwater. The thin soils, numerous springs, karst geology, and sensitive streams of the Texas Hill Country Region leaves the area vulnerable to the risks associated with poorly monitored and mismanaged TLAPs. Such unauthorized discharges from TLAPs in the past have routinely resulted in increased pollution in Barton Creek and excessive algal growth which degrades the water quality

[1] Texas Commission on Environmental Quality, *Edwards Aquifer Map Viewer*, (last visited May 24, 2022) https://www.tceq.texas.gov/gis/edwards-viewer.html.
[2] Save Our Springs Alliance, *The Story of the Save Our Springs Alliance*, (last visited (May 24, 2022) https://www.sosalliance.org/our-story.html.

in Barton Creek and places the Edwards Aquifer at risk.[3] Due to its proximity to Barton Creek, location in the Edwards Aquifer Contributing Zone, and the thin soils characteristic of the area, the disposal site for the Permit poses a high risk for unauthorized discharges in violation of the Clean Water Act, like other TLAPs in the region. This places the biological and chemical integrity of Barton Creek and the Edwards Aquifer at in danger because of pollutants contained in unauthorized discharges of wastewater.

These risks stem from the application rate of wastewater and the nature of subsurface drip irrigation systems. SOS asks that TCEQ and the Applicant carefully consider the application rate in the Permit and select an application rate that adequately takes into account the disposal area's thin soils and leaky geology to avoid channelization and run-off into Barton Creek and contamination of the aquifer. SOS also asks that TCEQ and the Applicant increase the amount of wastewater storage capacity required for the Permit since subsurface drip irrigation systems reduce the amount of wastewater an area can assimilate. Moreover, SOS asks that TCEQ and the Applicant employ the most sensitive, state of the art monitoring systems to detect breaks and leaks in subsurface irrigation pipes as such breaks and subsequent oversaturation of the soil cause wastewater to flow quickly into the aquifer, degrading water quality.

For the above reasons, SOS opposes the Application and proposed TLAP Permit No. WQ0016111001 and asks that the Application be denied in order to protect Barton Creek and the Edwards Aquifer from harmful pollution and the dangers associated with another unmonitored and potentially dangerous TLAP.

Thank you for considering SOS's comments and allowing us to express our concerns about the Permit.

Sincerely,

Victoria Rose
Staff Attorney
Save Our Springs Alliance
4701 Westgate Blvd.
Bldg. D, Suite 401
Austin, Texas 78745
Tel.: 512-477-2320, ext. 6
Fax: 512-477-6410
victoria@sosalliance.org

[3] DR. LAUREN ROSS, LAND APPLIED WASTEWATER EFFLUENT IMPACTS ON THE EDWARDS AQUIFER (2011) (accessible at: https://aquiferalliance.org/Library/GEAAPublications/GlenroseEdwardsWastewaterReport20111103.pdf).

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Tuesday, April 1, 2025 3:47 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: TCEQ letter.docx

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: lrummel57@gmail.com <lrummel57@gmail.com>
Sent: Monday, March 31, 2025 3:51 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Leah Rummel

EMAIL: lrummel57@gmail.com

COMPANY:

ADDRESS: 12100 Trautwein Road
Austin, TX 78737

PHONE: 5124963565

FAX:

COMMENTS: I am requesting a contested case hearing for the TLAP permit No WQ0016111001. The proposed venue that has requested this permit is less than 1 mile from my house/property. Therefore I am an affected person impacted by the changes being proposed in this permit. I am deeply concerned with the water run-off from the venue to my property which has a wet water creek through my entire property and has a large run off pipe going under Trautwein Rd. Drainage from above my property including properties on Fitzhugh Rd. Changes to the structure of Fitzhugh will result in more water run off into the road and thus to my property run also runs into Barton Creek. There is no protection from the excess run-off. Therefore I protest approval of this permit as I will be severely impacted. I have attached pictures showing how water runs down Trautwein (from Fitzhugh) through my property ultimately going into Barton Creek. With the changes proposed by property will be flooded. Thank you for the ability to comment. Leah Rummel

Jan 29, 2024

Office of the Chief Clerk, MC 105
TCEQ
PO Box 13087
Austin, TX 78711-3087

Fax: 512-239-3311

Regulated Entity:
TCEQ Permit No.: WQ0016111001
TCEQ Docket No: Not Applicable
County: HAYS
Principal Name:
CN605898865 - BLIZEXAS LLC

Thank you for the opportunity to comment on the proposed facility application. The facility being proposed is within 1 mile of my two properties on Trautwein Rd at 12100 and 12102 Trautwein Rd. I have owned 12100 Trautwein Rd since 1994 and 12102 since 2000. When I bought my property in 1994, Trautwein was a dirt rd. Both of my properties have dry creek on the back of the properties that feeds into Barton Creek. Throughout the years the property has flooded and several times a year water flows heavily into Barton Creek. In fact it is flowing right now. Trautwein road has trenches so overflow above my two properties flow into the creek, then to Barton Creek. My property has flooded many times from the excess water flowing from Trautwein higher than my property and from Fitzhugh. Most of this part of the property is on the pipelines or very close to the dry creek. I often find objects from those above my properties after heavy rains. I have seen that these periods of flooding and swift water are happening more often and with stronger flows than in the past. I have also noticed the water is much more polluted with runoff from parking and construction above my properties leading to Baron Creek. This new facility will cause much more run-off and pollute my property and those along Barton creek during these periods of heavy rain. I don't believe this facility should be approved based on my experience owning this property for over 25 years. 20 years ago, my son, my dogs and my family swam in a small swimming hole on my property. Today I would not let my dog go near this water due to run off and possible wastewater mixed in with the flowing water. See pictures attached.

I request a contested hearing case before the company is approved to move forward.

Leah Rummel
12100 and 12102 Trautwein Rd
Austin, TX 78737
512-496-3565
Lrummel57@gmail.com

The creek flooded below my house.

The creek flooded on my property from the overflow coming off Trautwein Rd

The overflow directly from Trautwein. Please note at the top of this picture is a pipe under the road that goes to the other side of the road where there is a ditch. This is water coming directly from properties above including from Fitzhugh.

Barton creek below my property where the run off ends and heads into Austin.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 30, 2024 12:30 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: lrummel57@gmail.com <lrummel57@gmail.com>
Sent: Monday, January 29, 2024 5:09 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Leah Rummel

EMAIL: lrummel57@gmail.com

COMPANY:

ADDRESS: 12100 TRAUTWEIN RD
AUSTIN TX 78737-9358

PHONE: 5124963565

FAX:

COMMENTS: The facility being proposed is within 1 mile of my two properties on Trautwein Rd at 12100 and 12102 Trautwein Rd. I have owned 12100 Trautwein Rd since 1994. When I bought my property Trautwein was a dirt rd. Both of my properties have dry creek on the back of the properties that feed Barton Creek. Throughout the years the property has flooded. This is due to the properties being lower than those across the street and on Fitzhugh. In addition this is being the road is trenched to send run-off water to the dry creek. The water runs swiftly during these periods each year. I often find objects from those above my properties flow through the creek and may end up on my properties. I have seen that these periods of flooding and swift water are happening more often and with stronger flows than in the past. I have also noticed the water is much more polluted with runoff from parking and construction above my properties leading to Baron Creek. This new facility while cause much more run-off and pollute my property and those along Barton creek during these period of heavy rain. I don't believe this facility should be approved based on my experience owning this property for over 25 years. I request a contested hearing case before the company is approved to move forward.

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Leah Rummel

Mailing Address: 12100 Trautwein Rd Austin TX 78737

Physical Address (if different): _____

City/State: _____ **Zip:** _____

This information is subject to public disclosure under the Texas Public Information Act

Email: LRummel37@gmail.com

Phone Number: (512) 496 3565

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☑ No

  If yes, which one? _____

☑ **Please add me to the mailing list.**

☐ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☑ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Jan 29, 2024

Office of the Chief Clerk, MC 105
TCEQ
PO Box 13087
Austin, TX 78711-3087

Fax: 512-239-3311

Regulated Entity:
TCEQ Permit No.: WQ0016111001
TCEQ Docket No: Not Applicable
County: HAYS
Principal Name:
CN605898865 - BLIZEXAS LLC

Thank you for the opportunity to comment on the proposed facility application. The facility being proposed is within 1 mile of my two properties on Trautwein Rd at 12100 and 12102 Trautwein Rd. I have owned 12100 Trautwein Rd since 1994 and 12102 since 2000. When I bought my property in 1994, Trautwein was a dirt rd. Both of my properties have dry creek on the back of the properties that feeds into Barton Creek. Throughout the years the property has flooded and several times a year water flows heavily into Barton Creek. In fact it is flowing right now. Trautwein road has trenches so overflow above my two properties flow into the creek, then to Barton Creek. My property has flooded many times from the excess water flowing from Trautwein higher than my property and from Fitzhugh. Most of this part of the property is on the pipelines or very close to the dry creek. I often find objects from those above my properties after heavy rains. I have seen that these periods of flooding and swift water are happening more often and with stronger flows than in the past. I have also noticed the water is much more polluted with runoff from parking and construction above my properties leading to Baron Creek. This new facility will cause much more run-off and pollute my property and those along Barton creek during these periods of heavy rain. I don't believe this facility should be approved based on my experience owning this property for over 25 years. 20 years ago, my son, my dogs and my family swam in a small swimming hole on my property. Today I would not let my dog go near this water due to run off and possible wastewater mixed in with the flowing water. See pictures attached.

I request a contested hearing case before the company is approved to move forward.

Leah Rummel
12100 and 12102 Trautwein Rd
Austin, TX 78737
512-496-3565
Lrummel57@gmail.com

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

The creek flooded below my house.

The creek flooded on my property from the overflow coming off Trautwein Rd

The overflow directly from Trautwein. Please note at the top of this picture is a pipe under the road that goes to the other side of the road where there is a ditch. This is water coming directly from properties above including from Fitzhigh.

Barton creek below my property where the run off ends and heads into Austin.

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Wednesday, April 2, 2025 4:26 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Shield Ranch Request for Contested Case Hearing with Attachments.pdf

H
RFR

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: paul.sarahan@earthandwatergroup.com <paul.sarahan@earthandwatergroup.com>
Sent: Wednesday, April 2, 2025 11:03 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MR Paul Christopher Sarahan

EMAIL: paul.sarahan@earthandwatergroup.com

COMPANY: Earth & Water Law, LLC

ADDRESS: 6801 Jester Wild Dr.
Austin, TX 78750

PHONE: 5129714156

FAX:

COMMENTS: Attached please find Shield Ranch's Request for Contested Case Hearing.

E&W LAW
SOLUTIONS FOR BUSINESS & THE PLANET

Paul C. Sarahan
(512) 971-4156
paul.sarahan@eartheandwatergroup.com

April 2, 2025

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Request for Contested Case Hearing

Dear Chief Clerk Gharis:

I am submitting this request for contested case hearing on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938. Shield Ranch's property is identified as Property ID Nos. 936010, 455181, 936013, 310846, 531885, 103125, 936014, 936011, 936012, 103135, 464959 in the Travis Central Appraisal District's records. The physical address of the property is: 10417 Crumley Ranch Road, Austin, TX 78738 (mailing address); 11217 Crumley Ranch Road, Austin, TX 78738 (911 address). Please contact me directly if you have any questions.

Shield Ranch submitted public comments regarding the application and the proposed permit on August 19, 2022; November 28 and 29, 2022; March 23, 2023; September 8, 2023; and January 26 and 29, 2024. Shield Ranch provided oral comments at the two public meetings held in this matter on November 29, 2022 and January 29, 2024. Shield Ranch's written comments are attached hereto and incorporated herein by reference.

Following issuance of the Executive Director's Response to Comments, Shield Ranch continues to have the following disputed issues of fact: (1) the permit application has several inaccuracies that have yet to be corrected; (2) the proposed drip fields are insufficiently-sized and inappropriately-located; (3) the design of the site will allow for stormwater inflows into the drip fields; (4) these stormwater inflows will cause overflows from the drip fields resulting in contamination of groundwater and surface waters; (5) the geology of the site, which includes limestone and karst features, is incompatible with the proposed land application; (6) the application significantly underestimates the amount of wastewater that will be generated at the proposed site; (7) the application proposes insufficient storage capacity to properly handle the amount of wastewater that will be generated at the proposed site; (8) the application proposes inadequate nuisance odor abatement measures; (9) the proposed buffer between the drip fields and adjacent properties is insufficient and does not comply with applicable requirements; (10) the application's

sewage sludge solids management plan, the Recharge Feature Plan, the Soil Evaluation, the Site Preparation Plan, and the Soil Sampling and Testing do not comply with applicable requirements; (11) the application has inadequate provisions for ensuring sufficient water resources to maintain vegetation and prevent dust nuisance emissions; (12) the operations will endanger local groundwater supplies that are used by neighbors for domestic and livestock purposes; (13) the proposed discharges will negatively impact Barton Creek;[1] (14) the application includes insufficient information regarding Blizexas's plans and capability to respond to malfunctions in the Plant's equipment; (15) the application makes faulty assumptions in the calculations for the wastewater treatment system design; (16) the application fails to include an engineering report, including plans and specifications, that meets the requirements in 30 TAC Chapter 222, Subsurface Drip Dispersal Systems, Subchapter D: Design Criteria; (17) the permit should include discharge limits for Nitrogen and Phosphorus from any authorized discharge and decrease the permitted discharge limits for Total Suspended Solids ("TSS") and Biochemical Oxygen Demand ("BOD"), specifically, a maximum limit of 5 mg/l for both TSS and BOD; 2 mg/l Ammonia-Nitrogen (NH3-N); and 1 mg/l for Total Phosphorus; (18) the proposed impervious cover at 66.45% of the site under the available site design documents is unacceptable, heightens the potential for stormwater overflows into the proposed drip fields, and increases the likelihood of overflows out of those drip fields resulting in contamination of groundwater and surface waters; (19) the concern regarding the proposed impervious cover is exacerbated by the inadequacy of the post-construction stormwater control and detention measures proposed by Blizexas; and (20) the permit, if issued, should include a prohibition on land application if a significant rain is predicted to occur in the following three days, and Blizexas should be required to provide the Executive Director, for her review and approval, a calculation of the amount of rain that can be handled within each drip field without causing an overflow.

Shield Ranch specifically disputes the Executive Director's responses to Comments 1-5, 7-9, 11, 12, 15 and 17, as grouped by the Executive Director, as they fail to address the substance of Shield Ranch's comments and fail to make sufficient changes in the draft permit to address the concerns raised in its comments.

Shield Ranch is an affected party because its personal justiciable interest is affected by the application. Shield Ranch's property is located directly adjacent to the site that is the subject of the proposed permit and specifically is immediately adjacent to and downstream from the three drip fields proposed to be located on the north portion of the proposed site. Shield Ranch shares approximately 2,082 linear feet (635-meters or 0.39-miles) of property line with the subject property. Runoff from the Blizexas site along Fitzhugh Road will enter Barton Creek 2,185-feet or 0.41 miles from the entrance of Barton Creek into Shield Ranch Because of the proximity of Blizexas's site to the Shield Ranch property and the impacts that Blizexas's discharges will have on Shield Ranch's property, as set forth above, Shield Ranch will be adversely affected by the proposed facility in a manner not common to members of the general public.

[1] This segment of Barton Creek is, per TCEQ definitions, a pristine stream segment (a stream segment with naturally occurring phosphorous levels below 10 micrograms, or 0.01 milligrams, per liter in 90% of all water quality tests over the past 10 years).

I appreciate your consideration of Shield Ranch's request for a contested case hearing. Please contact me if you have any questions.

Sincerely,

Paul C. Sarahan

ENOCH KEVER

Paul C. Sarahan
(512) 615-1215
psarahan@enochkever.com

August 19, 2022

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality,
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Comment and Request for Contested Case Hearing

Dear Chief Clerk Gharis:

I am submitting these initial comments and request for a contested case hearing on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938. The mission of the Shield Ranch is to restore the land through the practice of land stewardship; protect the land and its resources through advocacy and engagement in regional issues; facilitate research and education; offer a diverse array of educational programs and nature immersion experiences; and practice sustainable agriculture and provide healthy food to neighbors and local markets. The Shield Ranch is located directly adjacent to the Blizexas property that is the subject of the pending permit application referenced above. Blizexas has reflected the location of the Shield Ranch on pages 74-76 of its application. Given its location in relation to the property that is the subject of the pending permit application and the effect that Blizexas's operations will have on Shield Ranch's operations, Shield Ranch is an affected person in the pending matter.

Based on our preliminary review of the application and the proposed draft permit, Shield Ranch initially has several issues of concern. We continue to review the application and the proposed draft permit, and we reserve the right to supplement Shield Ranch's public comment. We understand that a public meeting is being scheduled in response to a request by Representative Erin Zwiener (Texas House of Representatives, District 45), and we look forward to attending that meeting. We understand it is the agency's practice to keep the public comment period open until the date of the public meeting. We have noted, however, that the Commissioners' Integrated Database reflects that the public comment period closes on August 19, 2022. In the interest of ensuring that Shield Ranch's interests are protected, we are submitting our initial comments within the 30-day window following Blizexas's July 20, 2022 publication of the Notice of Application and Preliminary Decision for Water Quality Land Application Permit for Municipal Wastewater (NAPD).

Shield Ranch's initial issues regarding Blizexas's application are as follows:

(1) In Administrative Report 1.0, Item 8.e. of the application, Blizexas checked "No" in response to the application's question - "Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?" The Commission's rules, 30 Tex. Admin. Code §§ 39.418, 39.419 39.405, and 39.426, require publication in an alternative language if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available. The Site is located within the attendance zone for the Dripping Springs Elementary School. Dripping Springs Elementary hosts the dual-language one-way bilingual program in Spanish for Dripping Springs Independent School District (*see* https://www.dsisdtx.us/domain/282). Blizexas has failed to publish either its Notice of Receipt of Application and Intent to Obtain Permit (NORI) or its NAPD in Spanish. Shield Ranch respectfully requests that the Executive Director require Blizexas to comply with 30 Tex. Admin. Code § 39.426 and re-publish its NAPD in Spanish, and re-start the public comment period upon the date of that re-publication.

(2) In Administrative Report 1.0, Item 9.d and 9.e. of the application, Shield Ranch has noted inconsistencies between the adjacent landowner list and the Hays County Appraisal District (HCAD) records such that it is possible that the correct adjacent landowners were not sent the NORI or the NAPD. These inconsistencies are also present in Worksheet 7, Attachment 1 (TLAP Application Attachment 30) of the application. Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its application and provide the required notices to the correct adjacent landowners who were not sent the NORI or the NAPD. Specifically, the Affected Landowners List with Table (TLAP Application Attachment 4) does not match the Hays County Appraisal District (HCAD) records with respect to the following properties, as designated on pages 74-76 of Blizexas' application :

a. Property 2 – This lot is listed in the application as being owned by 2W Austin Development, but it was transferred to Half-Ton LLC on May 24, 2021. The mailing address for Half-Ton LLC is 12730 Pauls Valley Road, Austin, TX 78737-9600.

b. Property 8 – This lot is listed in the application as being owned by 2W Austin Development, but it was transferred to JVH Industries LLC on June 5, 2021. The mailing address for JVH Industries LLC is 1200 Hardee Rd, Coral Gables, FL 33146.

c. Property 10 – This lot is listed in the application as being owned by SW 19. This lot contains 24 condominiums and, as shown on the attached summary for 15210 Fitzhugh Road, there are twelve separate owners.

(3) In Administrative Report 1.0, Item 11.f. of the application, Blizexas lists Barton Creek as the nearest watercourse to which rainfall run-off might flow if not contained. Barton Creek is Segment 1430 of the Texas Surface Water Quality Standards (SWQS). The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life. In addition, the report states that Barton Creek is a concern for near non-attainment (CN) of the SWQS for toxicity in sediment. The report states that the potential source for impairment is impervious surface/parking lot run-off and municipal (urbanized high density area), a condition that could be exacerbated by Blizexas's proposed site development project (*See* https://www.tceq.texas.gov/downloads/water-quality/assessment/integrated-report-2022/2022-sources.pdf).

(4) Shield Ranch notes that the TCEQ application format does not request information on federal and state listed threatened and endangered species. There are two federally listed endangered species, the golden-cheeked warbler (Dendroica chrysoparia) and the recently de-listed black-capped vireo (Vireo atricapilla), for which a Regional Habitat Conservation Plan was completed for Hays County developments in 2010 due to the potential for habitats of these species to be present throughout the County (https://hayscountytx.com/departments/development-services/hays-county-regional-habitatconservation-plan/). In addition to other potential impacts, the light and noise pollution that will be generated from Blizexas's proposed operations will negatively impact these species. It appears that potentially suitable habitat for the federally listed golden-cheeked warbler is present within the County; therefore, an Endangered Species Act (ESA) review and consultation should occur with the US Fish and Wildlife Services (USFWS) - Austin Ecological Services Field Office if potential habitats are identified within the proposed Facility boundaries.

(5) In Domestic Worksheet 3.3, Section 6, the application states that the proposed Facility is not located within the Edwards Aquifer Recharge or Transition Zones which is accurate. However, the proposed Facility is located within the Edwards Aquifer Contributing Zone. 30 Tex. Admin. Code § 213.21 states that regulated activities disturbing at least five acres are subject to the provisions of the 30 Tex. Admin. Code ch. 213, subch. B. Regulated activities include any construction or post-construction activity that has the potential to contribute pollution to surface water including buildings, aboveground storage tank systems, clearing, excavation or other activities which alter or disturb the topographic or existing storm water run-off characteristics *See* 30 Tex. Admin. Code § 213.22(6). Based on the Site Drawing provided in the TLAP Application Attachment 10, the proposed Facility will disturb more than five acres and the development of the site will include "regulated activities" under 30 Tex.

Admin. Code ch. 213, subch. B. Shield Ranch respectfully requests that the Executive Director require that Blizexas be prohibited from beginning the construction of the proposed Facility until it has filed an Edwards Aquifer Contributing Zone plan with the appropriate TCEQ regional office and the Executive Director has issued an approval letter for that contributing zone plan, pursuant to 30 Tex. Admin. Code § 231.23(a).

(6) Administrative Report 1.1 Buffer Zone Map (TLAP Application Attachment 8) of the application shows four of the subsurface area drip dispersal system (SADDS) units adjacent to the property boundaries. Shield Ranch has concerns about the appropriateness of the location of the dripfields. It appears from the Buffer Zone Map that four SADDS units are located less than 150 feet from the nearest property line. These are the SADDS labeled as 34,518 square feet (SF) and 28,548 SF in the northwest corner and 23,106 SF and 21,182 SF in the southern portion of the proposed Facility. The Commission's rule, 30 Tex. Admin. Code § 309.13(e) states wastewater treatment plant units may not be located closer than 150 feet to the nearest property line in order to qualify as a compliance requirement to abate and control a nuisance of odor. Blizexas only proposes as its method for abating and controlling odor nuisance the use of a buffer zone. Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its permit application to ensure that all of its SADDS units are located at least 150 feet from the nearest property line.

(7) Site Drawing (TLAP Application Attachment 10) of the application shows two ponds. These ponds are not mentioned in the application and are not shown on other drawings. Shield Ranch is concerned about the impact that Blizexas's proposed operations will have on these ponds. Shield Ranch respectfully requests that the Executive Director require Blizexas to demonstrate how it intends to ensure that pollution from Blizexas's operations do not impact these ponds, and amend its application to incorporate this demonstration.

(8) Recharge Feature Plan (Rev 1) (TLAP Application Attachment 24) of the application indicates that the property is located within the Edwards Aquifer Contributing Zone, and is subject to 30 Tex. Admin. Code ch. 213, subch. B. The site is located on the outcrop of the Upper Glen Rose Formation. Blizexas states it has researched the site and surrounding area for recharge features, such as caves, sinkholes, faults, or fractures but did not identify the presence of these features. Shield Ranch is concerned that without conducting a visit to the proposed Facility, we have been unable to confirm the presence or absence of recharge features that could impact the uppermost groundwater-bearing unit. Shield Ranch respectfully requests that the Commission conduct its own investigation of the site and determine the presence or absence of recharge features that could impact the uppermost groundwater-bearing unit.

(9) The Core Data form was signed by Erin Banks instead of a party with signatory authority. The Core Data form instructions (Section V, Item 46) state that "the signer must have signature authority..."A Delegation of Authority letter was not included in the application. In addition, the Core Data Form is missing the street address. (Administrative Report Item 3). Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its application to correct these deficiencies.

(10) Original Photographs (TLAP Application Attachment 6) of the application included photographs of the locations for only three of the six SADDS units. Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its application to provide photographs of the locations of the three SADDS units that have not yet been included in the photolog.

(11) The application includes additional errors that indicate that the application does not meet TCEQ's requirements. Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its application to correct the following issues:

a. Administrative Report 1.0, Item 1. – The check number for the fee payment is missing from the form.

b. Administrative Report 1.0, Item 9.d and 9.e. The address for the owner is listed as 2470 Windchester Blvd, Ste D, Campbell, CA 95008. The address in other parts of the permit is listed as 258 Union Avenue, Los Gatos, CA 95032.

(12) Shield Ranch has concerns and questions regarding the potential impact of Blizexas's operations and the proposed land application of wastewater on Barton Creek and the waters running into Barton Creek. Because of the issues set forth in this letter, Shield Ranch asserts that the application does not meet TCEQ's requirements. Because the proposed draft permit is based on the accuracy and sufficiency of the application, Shield Ranch has questions about the sufficiency of the draft permit.

(13) Shield Ranch is also concerned about the adequacy of Blizexas's plans to ensure that stormwater from the site is diverted away from the proposed SADDS units. Shield Ranch has concerns about the ability and the adequacy of the plan to control rainfall run-off. The plan is mention on page 38 of the application, but there are no details and no engineering drawings provided. Shield Ranch has further concerns regarding the potential impact to the pond adjacent to two of the SADDS units, as discussed in Item 7 above.

(14) Shield Ranch has concerns and questions regarding the accurate quantification of the amount of wastewater that will be generated at the proposed site. Shield Ranch has questions on the proposed number, frequency, and size of the events to be held at the site; and the method of waste collection (standard bathroom plumbing vs. porta-potty,

e.g.). It appears that at least a reference to this type of information is contained within the application filed with TCEQ, but that this information has been redacted from the version of the application that has been made available to the public. Without such information, Shield Ranch cannot verify the accuracy of the calculation or the determination of:

a. The design flow;
b. The peak 2-hour flow;
c. The sufficiency and the performance of the proposed capacity of the flow equalization system, including, for example, the flow equalization tank, the aeration basin the aerobic digester, the clarifier, and the chlorine contact chamber;
d. The adequacy of the irrigation area;
e. The adequacy of the tank storage capacity;
f. The adequacy of the annual cropping plan;
g. The adequacy of the groundwater monitoring plan;
h. The adequacy of the soil's water capacity; and
i. The adequacy of the infiltration rate, the nitrogen application rate and other dosing information.

(15) Shield Ranch has concerns as to whether the effluent will remain within the effluent disposal site boundaries, particularly given how close four of the SADDS units are to property boundaries. The application provides insufficient data to determine the radius of influence and how far the applied wastewater will disburse. The soil type and conditions at the site are particularly relevant to these determinations.

(16) Shield Ranch has concerns about the facility's inadequate plans to abate and control nuisance odors. As noted above, the buffer is insufficient, and Shield Ranch will be negatively impacted by Blizexas's operations.

(17) Blizexas has a contractual agreement with Wastewater Residuals Management for offsite disposal of wastes generated from the site that cannot be managed onsite. Wastewater Residuals Management has applied for a major permit amendment to increase its daily maximum capacity. Shield Ranch has concerns as to whether Wastewater Residuals Management currently has sufficient capacity to handle offsite disposal of wastes generated from the Blizexas site that cannot be managed onsite if its major permit amendment is not granted prior to Blizexas's proposed waste disposal start date of June 2023.

(18) Shield Ranch has concerns about the adequacy of the sewage sludge solids management plan, the Recharge Feature Plan, the Soil Evaluation, the Site Preparation Plan, and the Soil Sampling and Testing.

(19) The application indicates that there are no plans to water the grasses proposed to be used at the site as part of the application. *See* Annual Cropping Plan, TLAP Application Attachment 17. The effects of drought conditions raise the question of the ability of the grass to be maintained as proposed absent such watering. The lack of any plan to use water to maintain the grass creates a fire hazard in dry summer months, which creates a hazard for neighboring properties, including the Shield Ranch.

(20) There is inconsistency in the application where Blizexas indicates that fertilizers will not be needed and that they would be required. *See* soil analysis reports, pp. 260-264.

(21) Shield Ranch has concerns regarding the availability of sufficient quantities of water to keep down nuisance dust emissions. The application includes no information from which to draw conclusion on the capacity of the well and the extent of uses to which Blizexas will put water drawn from its on-site well.

(22) Correspondingly, Shield Ranch has concerns regarding the diversion of water for the purposes of keeping down dust emissions from higher uses of the water.

(23) For all of the reasons set forth above, the proposed site represents an incompatible land use in relation to neighboring properties.

(24) Shield Ranch has concerns about traffic, light and noise that will be caused by the proposed site.

(25) Shield Ranch has concerns about emergency response plans that will be required to respond to proposed events at the site, as well as to potential fire hazards as a result of the failure to use water to maintain grass in dry summer months.

(26) Road expansions and adequate ingress and egress routes will be required to maintain the safety of those utilizing the site, as well as the site's neighbors.

Shield Ranch respectfully submits these initial comments and requests that the Executive Director require Blizexas to amend its application and, as necessary, re-publish any required notices. Upon that amendment, Shield Ranch respectfully requests that the Executive Director determine whether Blizexas's application meets all applicable requirements and, if so, review the proposed draft permit and determine what changes are required in the proposed draft permit based on the amended application.

Based on its initial review of Blizexas's application, Shield Ranch has identified significant issues concerning whether the application meets all applicable requirements. As a result, Shield Ranch respectfully requests that a contested case hearing be held in this matter so that Shield Ranch may have the opportunity to fully litigate each of the issues raised here such that the State Office

of Administration and, ultimately, the Commission may appropriately determine whether Blizexas's application and the draft permit meet all applicable requirements.

Sincerely,

Paul C. Sarahan

PCS: po

Enclosure: Hays County Appraisal District Property Search, dated August 9, 2022

Hays CAD Property Search

Page 1 of 1 - Total: 24 (0.068 seconds)

Quick Ref ID	Nbrhd. Code	Type	Owner Name	Address	Appraised
R168969	C-FITZHUGH	Real	FITZHUGH BUSINESS CENTER LTD	15210 FITZHUGH RD, UNIT #3, AUSTIN, TX 78736	$27,290
R168975	C-FITZHUGH	Real	FITZHUGH BUSINESS CENTER LTD	15210 FITZHUGH RD, UNIT #9, AUSTIN, TX 78736	$58,660
R168989	C-FITZHUGH	Real	FITZHUGH BUSINESS CENTER LTD	15210 FITZHUGH RD, UNIT #23, AUSTIN, TX 78736	$2,480
R168990	C-FITZHUGH	Real	FITZHUGH BUSINESS CENTER LTD	15210 FITZHUGH RD, UNIT #24, AUSTIN, TX 78736	$128,990
R168983	C-FITZHUGH	Real	LINDS & DYLAN LLC SERIES FITZHUGH	15210 FITZHUGH RD, UNIT #17, AUSTIN, TX 78736	$401,190
R168984	C-FITZHUGH	Real	LINDS & DYLAN LLC SERIES FITZHUGH	15210 FITZHUGH RD, UNIT #18, AUSTIN, TX 78736	$509,720
R168974	C-FITZHUGH	Real	FITZHUGH TOWN CENTER LOT 8C LLC	15210 FITZHUGH RD, UNIT #8, AUSTIN, TX 78736	$74,420
R168985	C-FITZHUGH	Real	LINDS & DYLAN LLC- SERIES FITZHUGH TRES	15210 FITZHUGH RD, UNIT #19, AUSTIN, TX 78736	$74,420
R168967	C-FITZHUGH	Real	BUCKHORN HOLDINGS LLC	15210 FITZHUGH RD, UNIT #1, AUSTIN, TX 78736	$74,420
R168968	C-FITZHUGH	Real	BUCKHORN HOLDINGS LLC	15210 FITZHUGH RD, UNIT #2, AUSTIN, TX 78736	$62,180
R168970	C-FITZHUGH	Real	BUCKHORN HOLDINGS LLC	15210 FITZHUGH RD, UNIT #4, AUSTIN, TX 78736	$93,350
R168971	C-FITZHUGH	Real	HAYS CONSTRUCTION SERVICES LLC	15210 FITZHUGH RD, UNIT #5, AUSTIN, TX 78736	$74,420
R168972	C-FITZHUGH	Real	WOODSIDE PROPERTIES LLC	15210 FITZHUGH RD, UNIT #6, AUSTIN, TX 78736	$74,420
R168973	C-FITZHUGH	Real	MESQUITE COMMERCIAL DEVELOPMENT LLC	15210 FITZHUGH RD, UNIT #7, AUSTIN, TX 78736	$140,420
R168976	C-FITZHUGH	Real	MESQUITE COMMERCIAL DEVELOPMENT LLC	15210 FITZHUGH RD, UNIT #10, AUSTIN, TX 78736	$39,530
R168977	C-FITZHUGH	Real	RKC PARTNERSHIP ONE LLC	15210 FITZHUGH RD, UNIT #11, AUSTIN, TX 78736	$216,880
R168978	C-FITZHUGH	Real	SW 19 LLC	15210 FITZHUGH RD, UNIT #12, AUSTIN, TX 78736	$164,650
R168979	C-FITZHUGH	Real	HAYS CONSTRUCTION SERVICES LLC	15210 FITZHUGH RD, UNIT #13, AUSTIN, TX 78736	$74,420
R168980	C-FITZHUGH	Real	HAYS CONSTRUCTION SERVICES LLC	15210 FITZHUGH RD, UNIT #14, AUSTIN, TX 78736	$74,420
R168981	C-FITZHUGH	Real	RKC PARTNERSHIP ONE LLC	15210 FITZHUGH RD, UNIT #15, AUSTIN, TX 78736	$74,420
R168982	C-FITZHUGH	Real	RKC PARTNERSHIP ONE LLC	15210 FITZHUGH RD, UNIT #16, AUSTIN, TX 78736	$74,420
R168986	C-FITZHUGH	Real	SW 19 LLC	15210 FITZHUGH RD, UNIT #20, AUSTIN, TX 78736	$523,950
R168987	C-FITZHUGH	Real	MESQUITE COMMERCIAL DEVELOPMENT LLC	15210 FITZHUGH RD, UNIT #21, AUSTIN, TX 78736	$511,580
R168988	C-FITZHUGH	Real	SW 19 LLC	15210 FITZHUGH RD, UNIT #22, AUSTIN, TX 78736	$510,650

1 - 24 of 24 items

ENOCH KEVER

Paul C. Sarahan
(512) 615-1215
psarahan@enochkever.com

November 28, 2022

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Supplemental Comments and Request for Contested Case Hearing

Dear Chief Clerk Gharis:

I am submitting these supplemental comments and request for a contested case hearing on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938. These supplemental comments are in addition to comments submitted on behalf of Shield Ranch on August 19, 2022. In addition to its initial comments, Shield Ranch submits the following:

(1) Shield Ranch noted in its initial comment that, in Administrative Report 1.0, Item 8.e. of the application, Blizexas checked "No" in response to the application's question - "Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?" The Commission's rules, 30 Tex. Admin. Code §§ 39.418, 39.419, 39.405, and 39.426, require publication in an alternative language if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available. The Site is located within the attendance zone for the Dripping Springs Elementary School. Dripping Springs Elementary hosts the dual-language one-way bilingual program in Spanish for Dripping Springs Independent School District (*see* https://www.dsisdtx.us/domain/282). Blizexas has failed to publish either its Notice of Receipt of Application and Intent to Obtain Permit (NORI) or its NAPD in Spanish.

Shield Ranch respectfully requests that the Executive Director require Blizexas to comply with 30 Tex. Admin. Code § 39.426 and re-publish the required notices in Spanish, and re-start the public comment period upon the date of that re-publication. In support of Shield Ranch's comment, Shield Ranch is supplying the Executive Director with additional information confirming: (1) Dripping Springs Elementary

School is the elementary school nearest to property located approximately 0.25 mile east of the intersection of Crumley Ranch Road and Fitzhugh Road, in Hays County, Texas 78737; (2) Dripping Springs Elementary School provides a bilingual education program pursuant to Texas Education Code, Chapter 29, Subchapter B, and 19 TAC § 89.1205(a) (relating to Required Bilingual Education and English as a Second Language Programs); and (3) Students are enrolled in a bilingual education program at Dripping Springs Elementary School.

TCEQ's rules, 30 TAC §§ 39.418, 39.419, 39.405, and 39.426, require publication in an alternative language (in this case, Spanish) if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available. *See* Tex. Educ. Code § 29.053, 29 TAC §§ 89.1205 and 89.1203(7). As part of its application, Blizexas's CEO certified under penalty of law that a bilingual education program is not required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility. See pages 7 and 13 of the Blizexas application, which I have attached. As a result of this certification, Blizexas was not required by TCEQ to publish notice of its application or of TCEQ's proposed draft permit in Spanish. The notices were only published in English.

The Site is located within the attendance zone for the Dripping Springs Elementary School. Dripping Springs Elementary hosts the dual-language one-way bilingual program in Spanish for Dripping Springs Independent School District (*see* https://www.dsisdtx.us/domain/282). Ms. Marcia Holsonbake, the Dripping Springs ISD's ESL/Bilingual Program Coordinator, confirmed that the district was required to offer a bilingual program based on the number of non-English speaking students. Dripping Springs ISD has had the program for 10 years. Dripping Springs Elementary's ESL/Bilingual program is run by Jamie Eubanks, who can be reached at (512) 858-3700.

In addition, Dripping Springs ISD reported it had 341 students in its Bilingual/ESL Education programs in the 2020-2021 school year. *See* DSISD Texas Academic Performance Report, relevant excerpts of which are attached. *See also* https:/rptsvr1.tea.texas.gov/cgi/sas/broker?_service=marykay&_program=perfrept.perfmast.sas&_debug=0&ccyy=2021&lev=D&id=105904&prgopt=reports%2Ftapr%2Fpaper_tapr.sas. Of these, 129 students participated in Dripping Springs Elementary's Bilingual/ESL Education program. *See* DSISD Texas Academic Performance Report for Dripping Springs Elementary, relevant excerpts of which are attached. *See also* https:/rptsvr1.tea.texas.gov/cgi/sas/broker?_service=marykay&_program=perfrept.perfmast.sas&_debug=0&ccyy=2021&lev=C&id=105904101&prgopt=reports%2Ftapr%2Fpaper_tapr.sas

Although it is not Shield Ranch's obligation to provide additional information to assist Blizexas in complying with its publication requirements, it is Shield Ranch's

understanding that the *El Mundo* newspaper serves Austin, San Antonio and surrounding areas, and delivers weekly to locations within Hays County.

Under TCEQ's rules, Blizexas had an obligation to publish notice of its application and of the draft permit in Spanish. Blizexas should be required to comply with 30 Tex. Admin. Code § 39.426 and re-publish the required notices in Spanish, and TCEQ should re-start the public comment period upon the date of that re-publication.

(2) A report produced by Baylor University researchers noted that Barton Creek's nutrient levels "were consistent with a high-quality, reference stream in the Edwards Plateau or Cross Timbers Ecoregions of central Texas, with total and orthophosphate (PO_4-P)-phosphorus values < 10 µg/L, total nitrogen (TN) at or below 300 ug/L, nitrite+nitrate-N values at or below 200 µg/L, and ammonium-N < 10 µg/L. All of these values represent high quality, low nutrient conditions."[1] Blizexas's application fails to account for and ensure the protection of Barton Creek's status as a high-quality, low-nutrient stream.

The proposed discharges sought to be permitted under Blizexas's pending application would negatively impact Barton Creek. Blizexas's permit application proposes inadequate on-site storage prior to land application. The soils in which Blizexas's proposed land application would be conducted are too thin to receive the proposed volume of wastewater and will become saturated and be particularly affected in rainy conditions, leading to uncontrolled runoff that will flow into Barton Creek.

In addition, Blizexas's application includes insufficient information regarding Blizexas's plans and capability to respond to malfunctions in the Plant's equipment. Such malfunctions will result in the discharge of untreated water that could have several, interrelated negative results, including: (1) discharge and runoff that was not anticipated with resulting impacts to the creek, (2) failure of irrigation fields to capture and process application of treated effluent, (3) soil not properly retaining, i.e., leaching, waste, and (4) nutrient levels that could lead to algae blooms in the creek.

(3) Shield Ranch is an affected party in relation to Blizexas's application and proposed operation. Shield Ranch's property is immediately adjacent to the location of Blizexas's proposed operation. Blizexas proposes to locate several drip fields in the direct vicinity of the property line between Blizexas's property and Shield Ranch's property. Shield Ranch will be directly affected by odors emanating from Blizexas's proposed wastewater facilities. Further, given the immediate proximity of the proposed drip fields to Shield Ranch's property line and the thin soils in this area, it is anticipated

[1] *See* Dr. R. S. King, Dr. J. A. Back, "Bioassessment of four Hill Country streams threatened by proposed municipal wastewater discharges," Oct. 2020.

that Shield Ranch will be subjected to runoff from Blizexas's drip fields and will suffer impacts personal and specific to Shield Ranch.

Shield Ranch is an affected party due to its immediate proximity to Blizexas's proposed operation. A reasonable relationship exists between Shield Ranch's interest in the likely runoff and odors that will result from Blizexas's regulated wastewater collection, storage, and disposal activities. Shield Ranch will very likely be impacted by Blizexas's regulated wastewater collection, storage, and disposal activities. Blizexas's proposed operation will impact the health and safety of those utilizing Shield Ranch, and will impact Shield Ranch's ability to use its property, particularly that portion of Shield Ranch that is in close vicinity of Blizexas's proposed operation. Due to runoff and odors emanating from Blizexas's operations, Shield Ranch's use of the natural resources on its property will also be impacted. Shield Ranch has timely submitted comments on the application in August 2022, and again here. These comments have not been withdrawn. For all of the reasons set forth above, Shield Ranch has a personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the application that is not common to members of the general public.

Shield Ranch respectfully submits these supplemental comments and requests that the Executive Director require Blizexas to amend its application and, as necessary, re-publish any required notices. Upon that amendment, Shield Ranch respectfully requests that the Executive Director determine whether Blizexas's application meets all applicable requirements and, if so, review the proposed draft permit and determine what changes are required in the proposed draft permit based on the amended application.

Based on its additional review of Blizexas's application, Shield Ranch has identified significant issues concerning whether the application meets all applicable requirements. As a result, Shield Ranch respectfully requests that a contested case hearing be held in this matter so that Shield Ranch may have the opportunity to fully litigate each of the issues raised here such that the State Office of Administration and, ultimately, the Commission may appropriately determine whether Blizexas's application and the draft permit meet all applicable requirements.

Sincerely,

Paul C. Sarahan

PCS/ln

Attachments

First and Last Name: Bill LeClerc

Credential (P.E, P.G., Ph.D., etc.):

Title: Director

Organization Name: Blizexas, LLC

Mailing Address: 258 Union Avenue

City, State, Zip Code: Los Gatos, CA 95032

Phone No.: 978-877-1798 Ext.: Fax No.:

E-mail Address: wleclerc@lexorbuilders.com

D. Public Viewing Information

If the facility or outfall is located in more than one county, a public viewing place for each county must be provided.

Public building name: Dripping Springs Community Library

Location within the building: Front Desk

Physical Address of Building: 501 Sportsplex Drive

City: Dripping Springs County: Hays

Contact Name: Librarian

Phone No.: 512-858-7825 Ext.:

E. Bilingual Notice Requirements:

This information **is required** for **new, major amendment, and renewal applications**. It is not required for minor amendment or minor modification applications.

This section of the application is only used to determine if alternative language notices will be needed. Complete instructions on publishing the alternative language notices will be in your public notice package.

Please call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine whether an alternative language notices are required.

1. Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?

   ☐ Yes ☒ No

   If **no**, publication of an alternative language notice is not required; **skip to** Section 9 below.

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

   ☐ Yes ☐ No

Section 14. Signature Page (Instructions Page 39)

If co-applicants are necessary, each entity must submit an original, separate signature page.

Permit Number:

Applicant: Blizexas, LLC

Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code § 305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signatory name (typed or printed): William Hirschman

Signatory title: CEO

Signature: _____ Date: 12/2/2021

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

Subscribed and Sworn to before me by the said on this 2nd day of Dec, 2021 by William Hirschman proved to me on the basis of satisfactory evidence to be the person(s) on this N/A day of N/A, 20 N/A. who appeared before me

My commission expires on the 3rd day of Dec, 20 24.

_____
Notary Public

ENISA HALILCEVIC
Notary Public · California
Santa Clara County
Commission # 2338982
My Comm. Expires Dec 3, 2024

[SEAL]

_____ County, Texas Santa Clara, California

2020-21 Texas Academic Performance Report (TAPR)

District Name: DRIPPING SPRINGS ISD

District Number: 105904

2021 Accountability Rating: Not Rated: Declared State of Disaster

2021 Special Education Determination Status:

Meets Requirements

Texas Education Agency
2020-21 Student Information (TAPR)
DRIPPING SPRINGS ISD (105904) - HAYS COUNTY

	Membership				Enrollment			
	District		State		District		State	
Student Information	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Students w/ Dyslexia	498	6.9%	241,070	4.5%	498	6.8%	241,197	4.5%
Foster Care	20	0.3%	17,033	0.3%	20	0.3%	17,090	0.3%
Homeless	8	0.1%	57,709	1.1%	8	0.1%	57,811	1.1%
Immigrant	75	1.0%	108,025	2.0%	75	1.0%	108,092	2.0%
Migrant	4	0.1%	16,657	0.3%	4	0.1%	16,733	0.3%
Title I	1,568	21.6%	3,457,855	64.5%	1,580	21.7%	3,464,887	64.5%
Military Connected	66	0.9%	144,596	2.7%	66	0.9%	144,683	2.7%
At-Risk	1,403	19.3%	2,634,284	49.2%	1,405	19.3%	2,636,849	49.1%
Students by Instructional Program:								
Bilingual/ESL Education	341	4.7%	1,123,936	21.0%	341	4.7%	1,124,413	20.9%
Gifted and Talented Education	478	6.6%	443,781	8.3%	478	6.6%	443,849	8.3%
Special Education	827	11.4%	595,885	11.1%	854	11.7%	605,043	11.3%
Students with Disabilities by Type of Primary Disability:								
Total Students with Disabilities	827		595,885					
By Type of Primary Disability								
Students with Intellectual Disabilities	278	33.6%	253,352	42.5%				
Students with Physical Disabilities	211	25.5%	127,106	21.3%				
Students with Autism	70	8.5%	83,737	14.1%				
Students with Behavioral Disabilities	260	31.4%	122,624	20.6%				
Students with Non-Categorical Early Childhood	8	1.0%	9,066	1.5%				
Mobility (2019-20):								
Total Mobile Students	338	5.1%	726,083	13.8%				
By Ethnicity:								
African American	9	0.1%	148,832	2.8%				
Hispanic	85	1.3%	372,491	7.1%				
White	218	3.3%	160,748	3.1%				
American Indian	1	0.0%	2,944	0.1%				
Asian	7	0.1%	18,370	0.4%				
Pacific Islander	0	0.0%	1,484	0.0%				
Two or More Races	18	0.3%	21,214	0.4%				
Count and Percent of Special Ed Students who are Mobile	59	7.3%	102,036	16.5%				
Count and Percent of EB Students/EL who are Mobile	21	6.8%	137,410	13.6%				
Count and Percent of Econ Dis Students who are Mobile	89	13.4%	508,900	16.0%				
Student Attrition (2019-20):								
Total Student Attrition	574	10.0%	700,130	16.6%				

2020-21 Texas Academic Performance Report (TAPR)

District Name: DRIPPING SPRINGS ISD

Campus Name: DRIPPING SPRINGS EL

Campus Number: 105904101

2021 Accountability Rating: Not Rated: Declared State of Disaster

Texas Education Agency

2020-21 Student Information (TAPR)

DRIPPING SPRINGS EL (105904101) - DRIPPING SPRINGS ISD - HAYS COUNTY

	Membership				Enrollment			
	Campus				Campus			
Student Information	**Count**	**Percent**	**District**	**State**	**Count**	**Percent**	**District**	**State**
Students w/ Dyslexia	43	5.0%	6.9%	4.5%	43	4.9%	6.8%	4.5%
Foster Care	2	0.2%	0.3%	0.3%	2	0.2%	0.3%	0.3%
Homeless	0	0.0%	0.1%	1.1%	0	0.0%	0.1%	1.1%
Immigrant	34	3.9%	1.0%	2.0%	34	3.9%	1.0%	2.0%
Migrant	1	0.1%	0.1%	0.3%	1	0.1%	0.1%	0.3%
Title I	867	100.0%	21.6%	64.5%	875	100.0%	21.7%	64.5%
Military Connected	12	1.4%	0.9%	2.7%	12	1.4%	0.9%	2.7%
At-Risk	234	27.0%	19.3%	49.2%	234	26.7%	19.3%	49.1%
Students by Instructional Program:								
Bilingual/ESL Education	129	14.9%	4.7%	21.0%	129	14.7%	4.7%	20.9%
Gifted and Talented Education	39	4.5%	6.6%	8.3%	39	4.5%	6.6%	8.3%
Special Education	103	11.9%	11.4%	11.1%	111	12.7%	11.7%	11.3%
Students with Disabilities by Type of Primary Disability:								
Total Students with Disabilities	103							
By Type of Primary Disability								
Students with Intellectual Disabilities	15	14.6%	33.6%	42.5%				
Students with Physical Disabilities	65	63.1%	25.5%	21.3%				
Students with Autism	**	**	8.5%	14.1%				
Students with Behavioral Disabilities	14	13.6%	31.4%	20.6%				
Students with Non-Categorical Early Childhood	*	*	1.0%	1.5%				
Mobility (2019-20):								
Total Mobile Students	32	4.6%	5.1%	13.8%				
By Ethnicity:								
African American	1	0.1%	0.1%	2.8%				
Hispanic	9	1.3%	1.3%	7.1%				
White	17	2.4%	3.3%	3.1%				
American Indian	0	0.0%	0.0%	0.1%				
Asian	2	0.3%	0.1%	0.4%				
Pacific Islander	0	0.0%	0.0%	0.0%				
Two or More Races	3	0.4%	0.3%	0.4%				
Count and Percent of Special Ed Students who are Mobile	5	4.7%	7.3%	16.5%				
Count and Percent of EB Students/EL who are Mobile	5	5.0%	6.8%	13.6%				
Count and Percent of Econ Dis Students who are Mobile	13	9.2%	13.4%	16.0%				
Student Attrition (2019-20):								
Total Student Attrition	121	15.7%	10.0%	16.6%				

ENOCH KEVER

Paul C. Sarahan
(512) 615-1215
psarahan@enochkever.com

March 23, 2023

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality,
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Additional Comment on Required Republication

Dear Chief Clerk Gharis:

I am submitting this additional comment, with information supplementing prior comments submitted on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938.

Shield Ranch noted in its initial comment that, in Administrative Report 1.0, Item 8.e. of the application, Blizexas checked "No" in response to the application's question - "Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?" The Commission's rules, 30 Tex. Admin. Code §§ 39.418, 39.419 39.405, and 39.426, require publication in an alternative language if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available. The Site is located within the attendance zone for the Dripping Springs Elementary School. Dripping Springs Elementary hosts the dual-language one-way bilingual program in Spanish for Dripping Springs Independent School District (*see* https://www.dsisdtx.us/domain/282). Blizexas has failed to publish either its Notice of Receipt of Application and Intent to Obtain Permit (NORI) or its NAPD in Spanish.

Shield Ranch understands that the Executive Director issued a Notice of Deficiency (NOD) regarding several elements of Blizexas's application, and that one of the issues addressed the bilingual notice requirement. A copy of the NOD is attached hereto, as Attachment 1. Shield Ranch also understands that Blizexas responded to the NOD, and specifically to the bilingual notice requirement, with a revision to its application. A copy of Blizexas's response to the NOD is attached hereto as Attachment 2.

Blizexas acknowledged that its prior statement in the application regarding the bilingual notice requirement was false. Blizexas provided a "revised Item E.1 of the Administrative

Application with regard to bilingual public notice and the revised Alternative Language Form for the NORI." On page 7 of the revised Item E, Blizexas admitted that there was a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the proposed facility, and that the students who attend either the elementary school or the middle school are enrolled in a bilingual education program at that school.

However, Blizexas, via its Representative, Erin Banks, certified that it had "conducted a diligent search for a newspaper or publication of general circulation in both the municipality and county in which the facility is located or proposed to be located and was unable to publish the notice in the required alternative language because: A newspaper or publication could not be found in any of the alternative languages in which notice is required."

This certification is also false. Shield Ranch's Supplemental Comments included the following: "Although it is not Shield Ranch's obligation to provide additional information to assist Blizexas in complying with its publication requirements, it is Shield Ranch's understanding that the *El Mundo* newspaper serves Austin, San Antonio and surrounding areas, and delivers weekly to locations within Hays County."

TCEQ's rules mandate Blizexas's publication of notice in Spanish. Under 30 Tex. Admin. Code § 39.426(b):

(1) The notice required by § 39.418[1] or § 39.419[2] of this title must be published in a newspaper or publication that is published primarily in the alternative languages in which the bilingual education program is or would have been taught, and the notice must be in those languages.

(2) The newspaper or publication must be of general circulation in the county in which the facility is located or proposed to be located. If the facility is located or proposed to be located in a municipality, and there exists a newspaper or publication of general circulation in the municipality, the applicant shall publish notice only in the newspaper or publication in the municipality. This paragraph does not apply to notice required to be published for air quality permits under § 39.603 of this title (relating to Newspaper Notice).

---

[1] 30 Tex. Admin. Code § 39.418(b) – "Not later than 30 days after the executive director declares an application administratively complete: (1) the applicant, other than applicants for air quality permits, shall publish Notice of Receipt of Application and Intent to Obtain Permit once under § 39.405(f)(1) of this title (relating to General Notice Provisions) and, for solid waste applications and injection well applications, also under § 39.405(f)(2) of this title. The applicant shall also publish the notice under §39.426 of this title (relating to Alternative Language Requirements), if applicable."

[2] 30 Tex. Admin. Code § 39.419(b) – "The applicant shall publish Notice of Application and Preliminary Decision at least once in the same newspaper as the Notice of Receipt of Application and Intent to Obtain Permit, unless there are different requirements in this section or a specific subchapter in this chapter for a particular type of permit. The applicant shall also publish the notice under § 39.426 of this title (relating to Alternative Language Requirements), if applicable.

Blizexas has admitted, finally, it is required to publish its public notices in Spanish, but has claimed an exemption from that requirement by asserting that a newspaper or publication could not be found in Spanish. Under 30 Tex. Admin. Code § 39.426(b)(2), the newspaper or publication must be of general circulation in the ***county***[3] in which the facility is located or proposed to be located." (Emphasis added).

As Shield Ranch previously noted, *El Mundo* is a Spanish newspaper that is of general circulation in Hays County. Its 2022 Media Kit, a copy of which is attached hereto as Attachment 3, demonstrates that *El Mundo* has a circulation of over 1000 in Hays County,[4] and is published every Thursday, except Thanksgiving and the first week of the year.[5] The 2022 Media Kit constitutes admissible evidence under Tex. R. Evid. 803(17) as a market quotation, list, directory, or other compilation that is generally relied on by the public or by persons in particular occupations. Under Tex. R. Evid. 803, no affidavit or testimony is required for admission of the 2022 Media Kit. As admissible evidence, the Executive Director can confidently rely on this document to demonstrate that in fact there is a Spanish newspaper of general circulation in Hays County, contrary to Blizexas's certification.

Blizexas's failure to comply with the alternative language requirements, which it now admits are applicable here, may not be allowed to continue. Before Blizexas's application may further be considered by the Executive Director, Blizexas must be required to comply with 30 Tex. Admin. Code § 39.426 and re-publish the required notices in Spanish in *El Mundo*, and re-start the public comment period upon the date of that re-publication. Shield Ranch respectfully requests that the Executive Director require Blizexas to take this required action.

Sincerely,

Paul C. Sarahan

cc: Harrison Malley, Environmental Law Division, TCEQ

PCS/ewm

Attachments

---

[3] The publication requirements subject to a facility located within a municipality are not applicable here, as Blizexas's proposed facility is not located within a municipality.
[4] *El Mundo 2022 Media Kit*, at p. 4 (Circulation of 500 in Buda; 550 in San Marcos; and 500 in the Hutto-Kyle area, with Kyle being located in Hays County).
[5] *Id.*, at p. 3.

Attachment 1

ROCKINGWALL RANCH WWTF
PERMIT NO. WQ0016111001
APPLICATION FOR A NEW PERMIT

Please address the following technical deficiencies identified at the public meeting held on November 29, 2022

ADMINISTRATIVE, FLOW JUSTIFICATION, AND TREATMENT UNIT

1. Page 7, item E.1 of the Bilingual Notice Requirements section of Administrative Report 1.0 identfies that there is no bilingual education program at the school nearest to the proposed facility. However, this comment was raised at the public meeting and it appears that this response is incorrect after the Environmental Law Division received confirmation from the engineer who prepared the application. Please submit revised permit application pages to correct this statement and complete the other required items 1-5 in that section, including the public notice verification form.

2. Domestic Technical Report 1.1, Section 1A: Justification of permit need. The Executive Director's staff received a significant number of comments and concerns about the proposed flow of 12,000 gallon per day. After reviewing these comments and the specific site characteristics of the facility, Executive Director's staff have similar concerns that the proposed flow was underestimated for this size of facility. Please provide more specific information about how you estimated the proposed flow for the facility. Revise Section 1A to provide justification for the proposed flows. Provide information such as the size of the development, the date construction on the development is scheduled to begin, the anticipated growth rate of the development, and what flow per unit/person was used to develop the proposed permitted flow. If additional space is needed, submit the justification information as an attachment.

   Estimate the design flow using 30 TAC Chapter 217.32(a)(3)(Table B.1). Otherwise provide the sources for your basis for this estimate. In addition, provide information whether the population growth will allow for the facility to be constructed and operated in the next 5 or 10 years.

3. Domestic Technical Report 1.0, Section 2B: Treatment Units. It appears that the treatment system includes a flow equalization basin (FEB). Please provide more details about the FEB such as sketch, location, buffer zone boundaries, type of material, (i.e., steel tank, fiber glass tank or earthen basin), specifications, and design parameters. Explain how the basin will handle the high variability of wastewater generation during peak hours.

GEOLOGY

The following items were identified by Water Quality Assessment staff during a site visit held with the applicant and its representative prior to the public meeting held November 29, 2022. If any of these items necessitate moving the subsurface area drip dispersal system (SADDS) fields from the locations indicated on the Site Map or modifying acreage, then the applicant must update the permit application, attachments, and required plans in all relevant portions to reflect those changes.

1. The following two items were identified at the site visit that were incorrectly identified as not being present in the submitted Recharge Feature Plan (RFP) and in response to an earlier notice of deficiencies. Please submit a revised RFP to correct inaccuracies and address these features. This RFP must be certified by a Texas licensed professional

engineer or geoscientist. Additionally, the applicant will need to submit revised maps identifying these features and any required setbacks between them and the SADDS fields (e.g. permit application Attachments 8, 10, 21, 22).

a. A roadside ditch is present on the south side of Fitzhugh Rd. This roadside ditch is considered to be a water in the state and per §222.81(a)(3), a minimum buffer of 100 feet is required to be maintained between this feature and the SADDS.

b. A stock tank is present immediately to the west of one of the SADDS fields. This feature is identified as a water feature on the USGS topographic map. The revised RFP must include a proposed best management practice to mitigate any potential impact to surface and groundwater quality from this feature. This feature is considered to be a water in the state. It was communicated to TCEQ during the site visit that the applicant proposes to fill in this feature to grade during construction. Please verify if the feature will be filled in or ensure that there is a minimum setback of 100-feet between this feature and the SADDS field.

2. During the site visit, a probable abandoned hand-dug water well and secondary feature that may or may not be an abandoned water well were identified adjacent to a cistern on the property. The permit application and RFP identified that there are no water wells onsite. Please provide more information about these features in the RFP. If they are wells, please also submit the revised Well Map and Well Table (attachments 18 and 19) required by Domestic Worksheet 3.0 item 6 identifying these features and proposed BMPs.

3. During the site visit it was observed that the topography of the two northern SADDS fields is more steeply sloping towards the north than it appeared from the USGS topographic map. These fields appear to be proposed immediately adjacent to the property boundary. Please setback the fields a minimum distance of 25 feet from the property boundary, or other spacing in accordance with 16 TAC Chapter 76, so that lysimeters can be installed in that buffered area to ensure that no offsite migration of wastewater will occur.

AGRONOMY

1. If the application fields are moved due to a response from any other noted deficiencies, please submit an updated/revised USDA Soil Survey map 9 (Domestic Worksheet 3.0 - Section 8), soil analyses (Domestic Worksheet 3.0 - Section 8), soil evaluation (Domestic Worksheet 3.3 - Section 3), and soil sampling (Domestic Worksheet 3.3 - Section 3). A signed statement may be submitted in lieu of an updated report if the previously submitted information is representative of the new fields.

2. If there are any updates to the flow and subsequently the size of the application fields, please submit the information stated in above deficiency (Agronomy #1) as well as updated Domestic Worksheet 3.0, Section 2 and Domestic Worksheet 3.3, Section 2.

For overall permit related questions, please contact Deba Dutta, P.E at (512) 239-4608 or via email at Deba.Dutta@tceq.texas.gov (preferred). For geology-related questions, please contact April Hoh, P.G. at (512) 239-2567 or via email at April.Hoh@tceq.texas.gov (preferred). For soils/agronomy-related questions, please contact Alan Barraza at (512) 239-1539 or via email at Alan.Barraza@tceq.texas.gov (preferred).

Attachment 2

wwdengineering
F-12009
9217 Hwy. 290 West, Suite 110, Austin, Texas, 78736 • 512.288.2111 • F. 512.610.6950 • www.wwdengineering.net

January 23, 2023

Deba Dutta, PE
Applications Review and Processing Team (MC 148)
Texas Commission on Environmental Quality
12101 Park Circle Dr.
Austin, TX 78753

RE: Response to Letter Post Public Meeting
TLAP Permit No. WQ0016111001

Mr. Dutta,
In response to your letter post the public meeting held on November 29, 2022, for the Rockingwall Development, we are providing the following information and attachments:

ADMINISTRATIVE, FLOW JUSTIFICATION AND TREATMENT UNIT

1. Please find attached the revised Item E.1 of the Administrative Application with regard to bilingual public notice and the revised Alternative Language Form for the NORI.
2. Please find attached the justification for the permit and how the flows were calculated, based upon empirical data from another, similar facility.
3. The Flow Equalization Basin (FEB) information is described below and the sizing was included in the original application,
   Flow Equalization (1) - 8'-2"ft D x 8ft W x 40ft L
   Constructed of Coated Carbon Steel
   FEB Process:
   The FEB will be sized to function both as a holding basin for all incoming flows and the source for controllable steady state forwarding to the process system. Thus, it will be oversized beyond our typical standard of 8 hours retention for normal steady state processing. This is due to the nature of the waste stream production for this event center, which is only expected to be open for use between one and three days/week, and sometimes not in use for an entire week, perhaps. Since the estimate provided for sizing of a collection and treatment system was both a "daily average" of 12,000 gallons and a peak of 35,000 gallons, this will equalize the surge3s in flow over days or a week in the 40,000 gallon basin. The basin will adhere to the 150' buffer that all treatment components are adhering to at the site.

GEOLOGY

1. Please find attached revised Recharge Feature Plan and Attachments 8, 10, 21, and 22.
2. We were unable to find any data on any possible hand dug or otherwise constructed wells at the site based upon our database searches. One existing well, not found in the databases, had been previously plugged, but we have no other information on this well, other than the plugging report. The owner, prior to constructing SADDS fields or the WWTP will have any possible recharge features encountered or addressed. The owner will have a licensed well driller properly plug these "well type" features in accordance with State law prior to construction. The updated RFP addresses these possible features, however, since we could not confirm any additional information on the possible feature, we were not able to update the well report, just the well list and map, as well as including the plugging report.
3. We have added a 25' property line setback for the two northernmost SADDS fields, this is reflected in the revised attachments.

AGRONOMY

1. As a result of the setbacks for the bar ditch and the 25' property line setback, some of the SADDS fields were removed from the permit application and relocated adjacent to SADDS fields included in the original permit application. These fields are adjacent to the original field locations and of the same soils types that had previously been evaluated and tested. The existing soil reports and analysis are representative of the new areas. The updated SADDS areas are shown on the attached exhibits.
2. There are no updates to the flow, the size of the dripfields remained the same, locations are just slightly adjusted.

If you have any questions or comments regarding this please contact me at [redacted]

Sincerely,
WWD Engineering

Erin K Banks

Erin Banks, P.E.
President

Attachments 1/23/23

First and Last Name: Bill LeClerc

Credential (P.E, P.G., Ph.D., etc.):

Title: Director

Organization Name: Blizexas, LLC

Mailing Address: 2470 South Winchester Boulevard, Suite D

City, State, Zip Code: Campbell, CA 95008

Phone No.: 978-877-1798 Ext.: Fax No.:

E-mail Address: wleclerc@lexorbuilders.com

D. Public Viewing Information

If the facility or outfall is located in more than one county, a public viewing place for each county must be provided.

Public building name: Dripping Springs Community Library

Location within the building: Front Desk

Physical Address of Building: 501 Sportsplex Drive

City: Dripping Springs County: Hays

Contact Name: Librarian

Phone No.: 512-858-7825 Ext.:

E. Bilingual Notice Requirements:

This information **is required** for **new, major amendment, and renewal applications.** It is not required for minor amendment or minor modification applications.

This section of the application is only used to determine if alternative language notices will be needed. Complete instructions on publishing the alternative language notices will be in your public notice package.

Please call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine whether an alternative language notices are required.

1. Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?

   ☒ Yes ☐ No

   If **no**, publication of an alternative language notice is not required; **skip to** Section 9 below.

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

   ☒ Yes ☐ No

3. Do the students at these schools attend a bilingual education program at another location?

   ☐ Yes ☒ No

4. Would the school be required to provide a bilingual education program but the school has waived out of this requirement under 19 TAC §89.1205(g)?

   ☐ Yes ☒ No

5. If the answer is yes to question 1, 2, 3, or 4, public notices in an alternative language are required. Which language is required by the bilingual program? Spanish

Section 9. Regulated Entity and Permitted Site Information (Instructions Page 33)

A. If the site is currently regulated by TCEQ, provide the Regulated Entity Number (RN) issued to this site. **RN**

Search the TCEQ's Central Registry at http://www15.tceq.texas.gov/crpub/ to determine if the site is currently regulated by TCEQ.

B. Name of project or site (the name known by the community where located):

Rockingwall

C. Owner of treatment facility: Blizexas, LLC

Ownership of Facility: ☐ Public ☒ Private ☐ Both ☐ Federal

D. Owner of land where treatment facility is or will be:

Prefix (Mr., Ms., Miss):

First and Last Name: Blizexas, LLC

Mailing Address: 2470 S Windchester Blvd, Ste D

City, State, Zip Code: Campbell, CA 95008

Phone No.: 978-877-1798 E-mail Address: wleclerc@lexorbuilders.com

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment:

E. Owner of effluent disposal site:

Prefix (Mr., Ms., Miss): Blizexas, LLC

First and Last Name:

Mailing Address: 2470 S Windchester Blvd, Ste D

City, State, Zip Code: Campbell, CA 95008

Phone No.: 978-877-1798 E-mail Address: wleclerc@lexorbuilders.com

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Public Notice Verification Form
Notice of Receipt of Application and Intent to Obtain Permit (NORI)
Water Quality Permit

Complete this page only if you are required to publish in an alternative language and are not able to do so.

Applicant Name: Blizexas, LLC

Site or Facility Name: Rockingwall WWTP

Water Quality Permit Number: WQ0016111001

Regulated Entity Number: RN 111436440 Customer Number: CN 605898865

ALTERNATIVE LANGUAGE EXEMPTION

I certify that I have conducted a diligent search for a newspaper or publication of general circulation in both the municipality and county in which the facility is located or proposed to be located and was unable to publish the notice in the required alternative language because:

☒ A newspaper or publication could not be found in any of the alternative languages in which notice is required.

☐ The publishers of the newspapers listed below refused to publish the notice as requested, and another newspaper or publication in the same language and of general circulation could not be found in the municipality or county in which the facility is located or proposed to be located.

Newspaper Name:

Language:

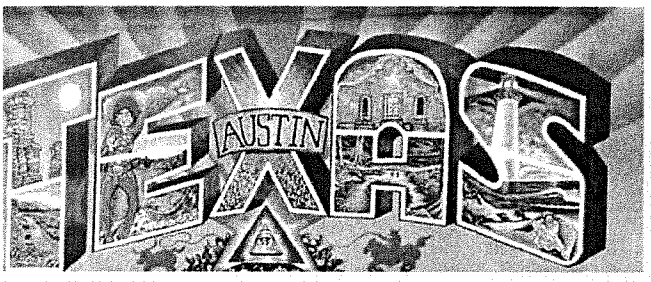
Applicant or Applicant Representative Signature: Erin K Banks

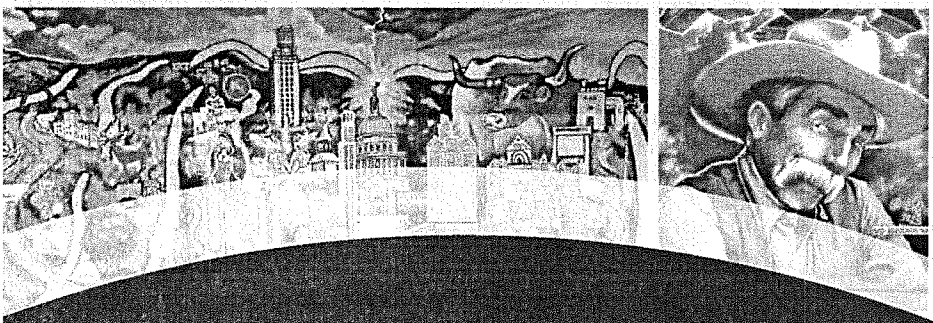
Title: President, WWD Engineering Date: 1/16/23

Attachment 3

2022 • MEDIA KIT

El Mundo





33 YEARS
Serving The Hispanic Community Since 1989

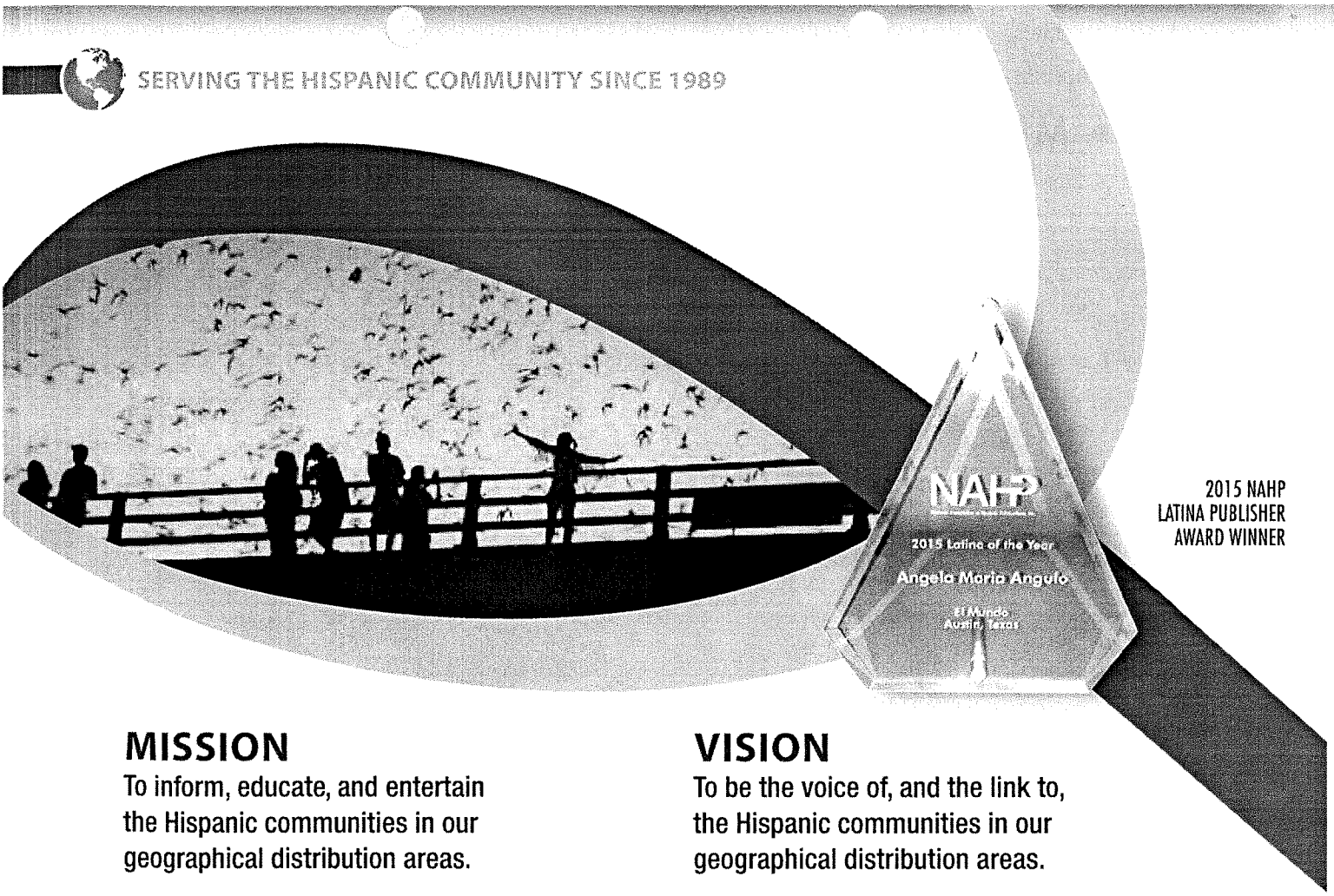
The beginning of your success with the hispanic community

www.elmundonewspaper.com

The Leading Weekly Spanish Newspaper for Central Texas

2519 E 5th Street • Austin, TX 78702
(512) 476-8636 • Fax: (512) 476-6402

SERVING THE HISPANIC COMMUNITY SINCE 1989



2015 NAHP
LATINA PUBLISHER
AWARD WINNER

MISSION

To inform, educate, and entertain the Hispanic communities in our geographical distribution areas.

VISION

To be the voice of, and the link to, the Hispanic communities in our geographical distribution areas.

1989-2022

- El Mundo Newspaper is Austin's largest and oldest Spanish language newspaper.
- El Mundo Newspaper is a rich source of local, regional, and international news on topics including entertainment, sports, and community activities and resources.
- Due to the success of our products and our understanding of the Hispanic market, we pride ourselves in being the voice of the Hispanic community of Central Texas.
- El Mundo Newspaper knows the market because we are the market. Our staff of professionals are from more than 6 different Spanish-speaking countries. Although we all have different tastes in food, music, and even words, we all share a passion for serving the Hispanic community... our community!
- We offer our clients not only our newspaper, but also a thorough understanding of the Central Texas Hispanic consumer to help them make the appropriate marketing decisions.

Integrity

- We are an honest, accountable and highly responsible trustee of the Hispanic community's communication needs.

Attitudes

- We reflect a CAN DO spirit. We are goal and results-oriented. We direct our time and attention toward critical mission and vision directed activities. We strive to keep actions simple, understandable, and easy to implement. We are committed to do whatever it takes to get the job done.

Excellence

- We are committed to business excellence and utilization of Total Quality Management techniques of focus on customer satisfaction supported by continuous improvements in everything we do. We strive to 'do the right things right, the first time'.

Business Objective

- To develop and grow a profitable communications business by achieving our Mission and Vision with consistent performance.

MOST POPULAR SIZES

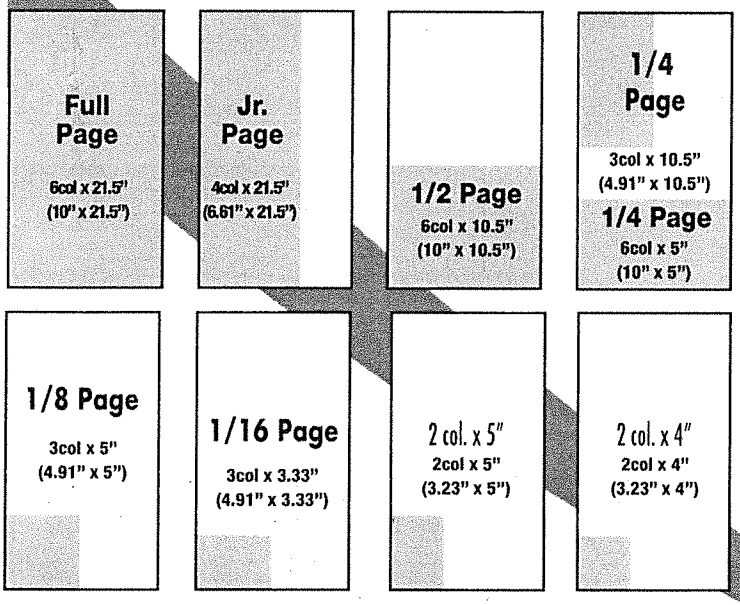
SIZE	RATES	
2X4"	$184 $200	BW FC
2X5"	$230 $250	BW FC
1/8 3 COL X 5"	$345 $375	BW FC
1/4 3 COL X 10.5"	$725 $788	BW FC
Jr. Page 4 COL X 21.5"	$1,978 $2,150	BW FC
1/2 6 COL X 10.5"	$1,449 $1,575	BW FC
1 Page 6 COL X 21.5"	$2,967 $3,225	BW FC

COLUMN INCH RATES

BLACK & WHITE	$23
FULL COLOR	$25

FIXED POSITION 15% EXTRA

DIMENSIONS



DIGITAL ARTWORK

- When providing digital artwork, ads must be submitted in Macintosh format with images at a resolution of 200 DPI.
- Ads must be accompanied by any and all artwork files and fonts used to create the ad if not providing a flattened, press-ready PDF.
- **Color Ads:** Must be CMYK. A color proof is required.
- **Email:** Please archive files as .Zip or .Sit before sending via email.

INSERTS (FSI)

- **El Mundo Newspaper** accepts free standing inserts. The minimum accepted is 15,000.

	COST PER IK
Single Sheet	$55
4-8 Page Tab	$65
12-16 Page Tab	$70
20-28 Page Tab or Flexi	$75

MECHANICAL SPECIFICATIONS

Page size: Broadsheet (129 CI)
Dimensions: 6 Columns x 21.5" (SAU 129)
Screen: 65 line screen

DISPLAY ADS BY COLUMN WIDTH

1 Column 1.54"	2 Columns 3.23"	3 Columns 4.91"
4 Columns 6.63"	5 Columns 8.31"	6 Columns 10"

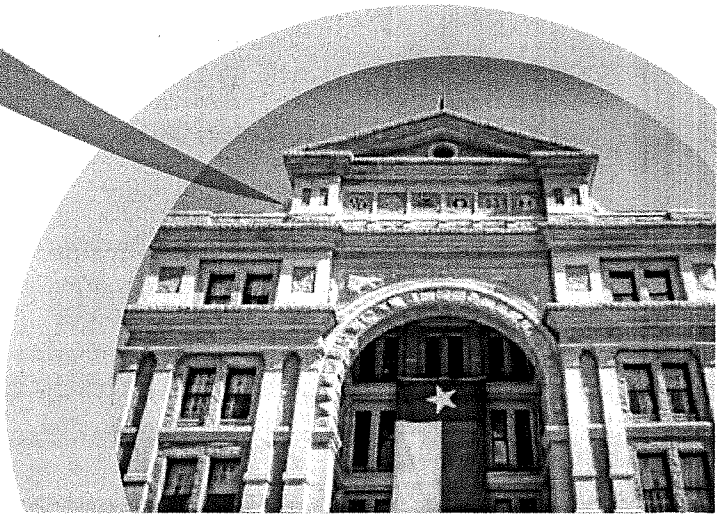
Spread: 21" x 21.50"

CLASSIFIED ADS BY COLUMN WIDTH

1 Col. 1.10"	2 Col. 2.38"	3 Col. 3.65"	4 Col. 4.92"
5 Col. 6.19"	6 Col. 7.46"	7 Col. 8.73"	8 Col. 10"

ISSUE & DEADLINE

- **El Mundo Newspaper** is published every Thursday, except Thanksgiving and the first week of the year.
- **Camera Ready Ads Reservation:** Friday preceding publication date, at 5pm.
- **Materials:** Monday before 2pm.
- **For Non-Camera Ready Ads, space reservation and materials:** Monday before publication date at 5pm.

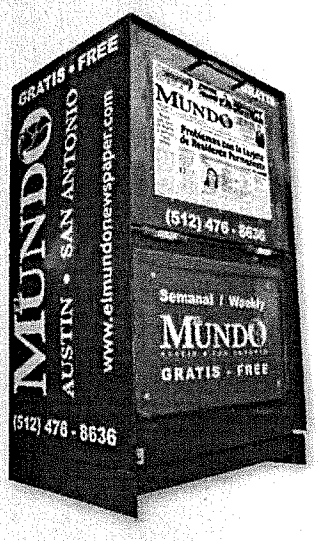


SERVING THE HISPANIC COMMUNITY SINCE 1989

DISTRIBUTION

Our distribution includes:

- Newspaper Racks
- Retail Locations in Austin and surrounding areas.



We distribute the paper in:

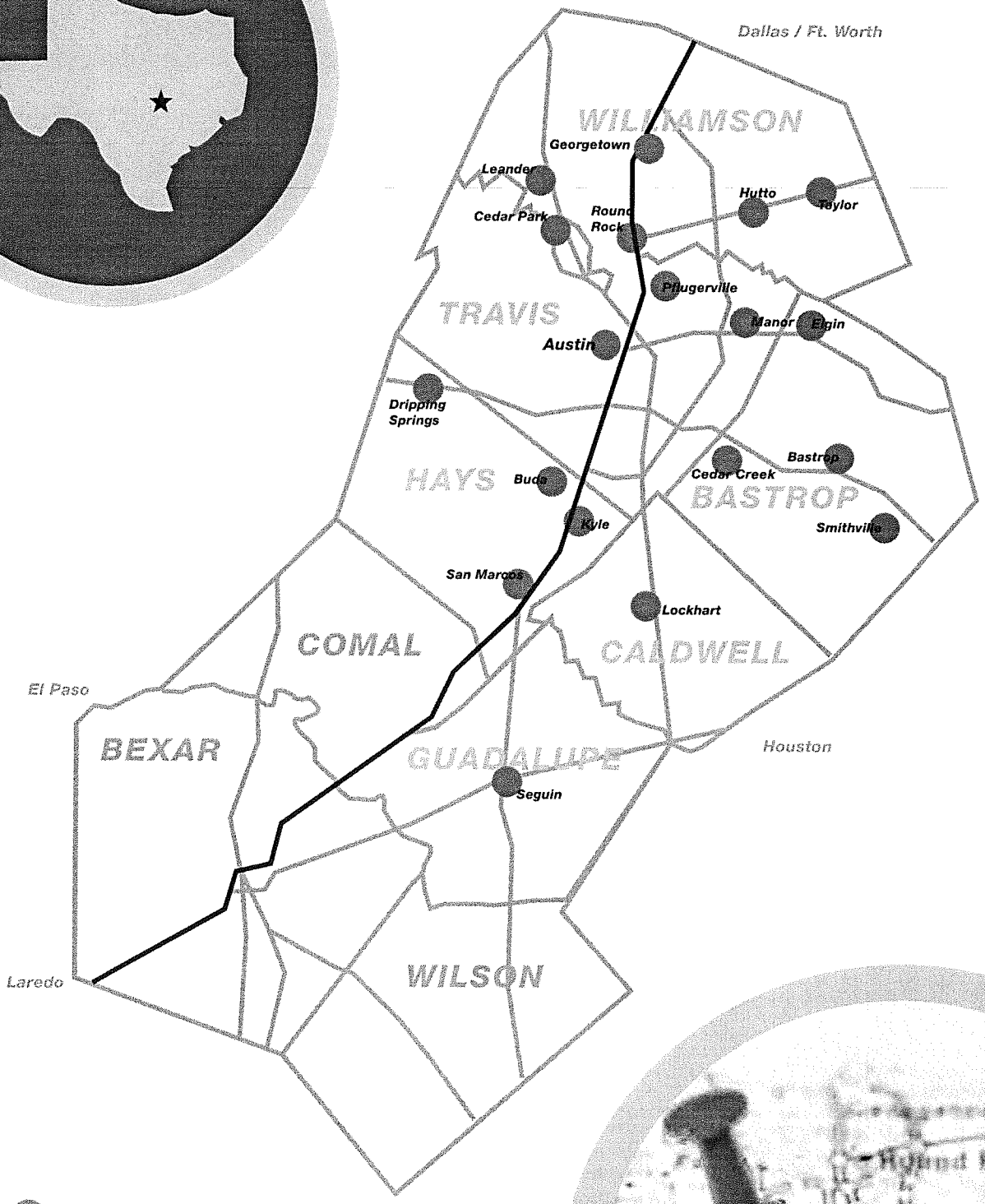
inside
11
community clinics
CommUnityCare HEALTH CENTERS

outside
2
SUPERMERCADO EL RANCHO

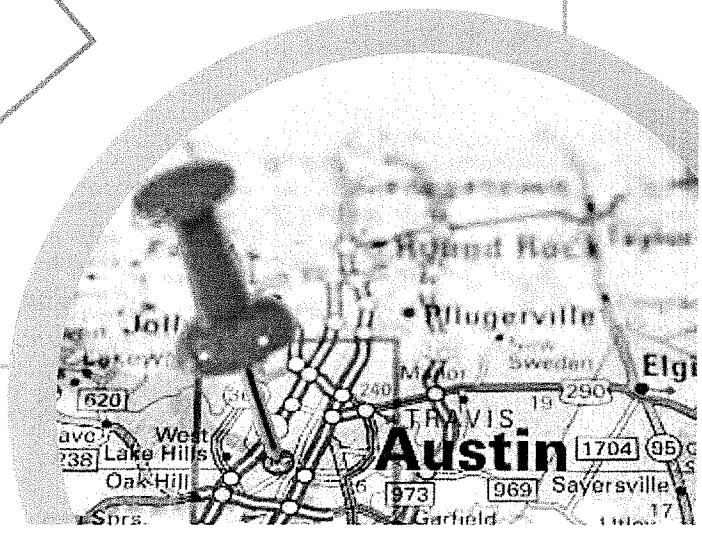
inside
40
supermarkets
H-E-B

Zip Code	Zone	Circulation
78701-78702	Austin	2025
78703-78704	Austin	2125
78705	Austin	25
78719-78722	Austin	430
78723-78724	Austin	2095
78727-78729	Austin	220
78735 - 78736	Austin	80
78741-78742	Austin	2550
78744-78746	Austin	3435
78748-78749	Austin	65
78751-78752	Austin	1705
78753	Austin	2200
78754-78757	Austin	445
78758	Austin	1340
78660	Pflugerville	850
78664-78681	Round Rock	2025
78602	Bastrop	700
78610	Buda	500
78612	Cedar Creek	500
78613	Cedar Park	500
78617	Del Valle	550
78621	Elgin	500
78626-78628	Georgetown	500
78634-78640	Hutto - Kyle	500
78644	Lockhart	185
78653	Manor	300
78130	New Braunfels	600
78666	San Marcos	550
76574	Taylor	500
Total 28,000 Copies Weekly		

DISTRIBUTION (MAP)

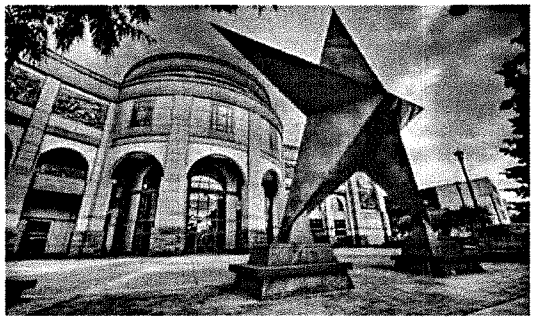


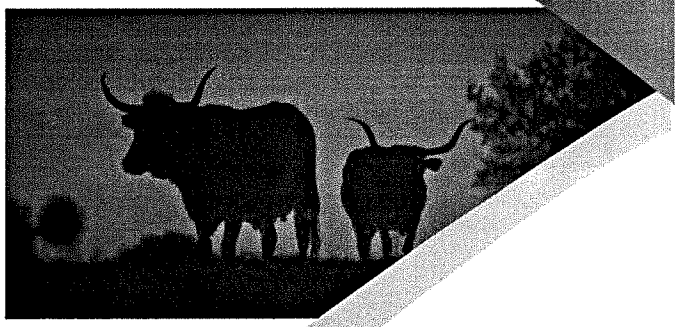
Areas of Distribution

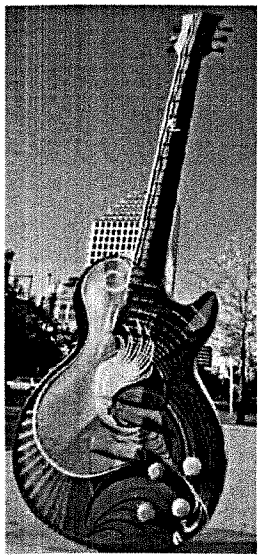


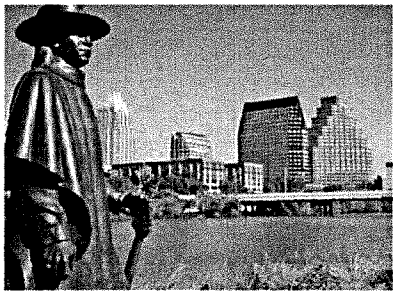
SERVING THE HISPANIC COMMUNITY SINCE 1989

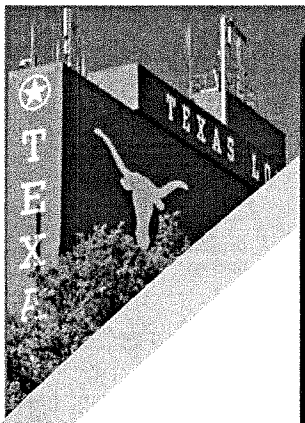
EL MUNDO NEWSPAPER READER'S PROFILE

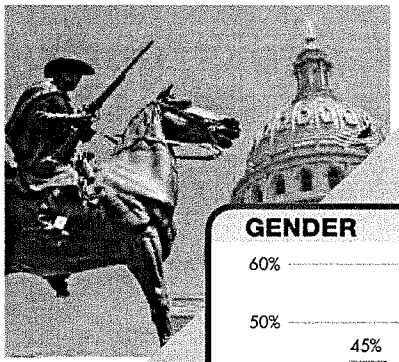


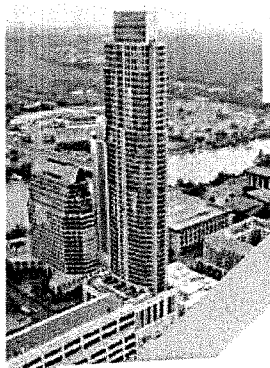




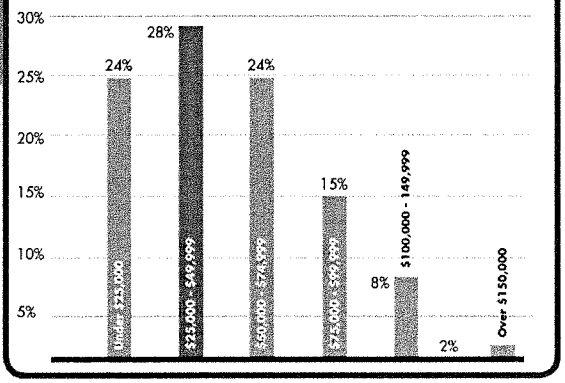




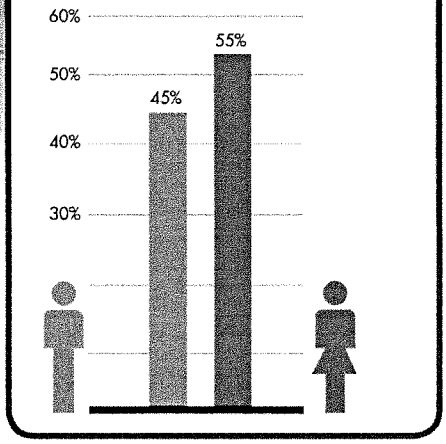




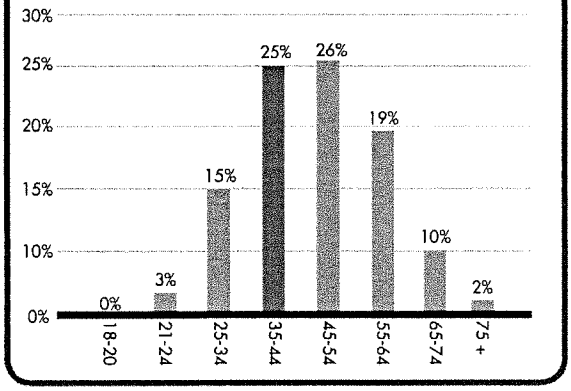
ANNUAL HOUSEHOLD INCOME



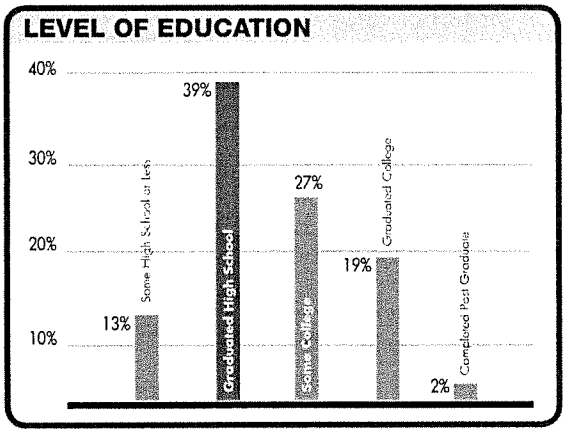
GENDER



AGE RANGE



LEVEL OF EDUCATION

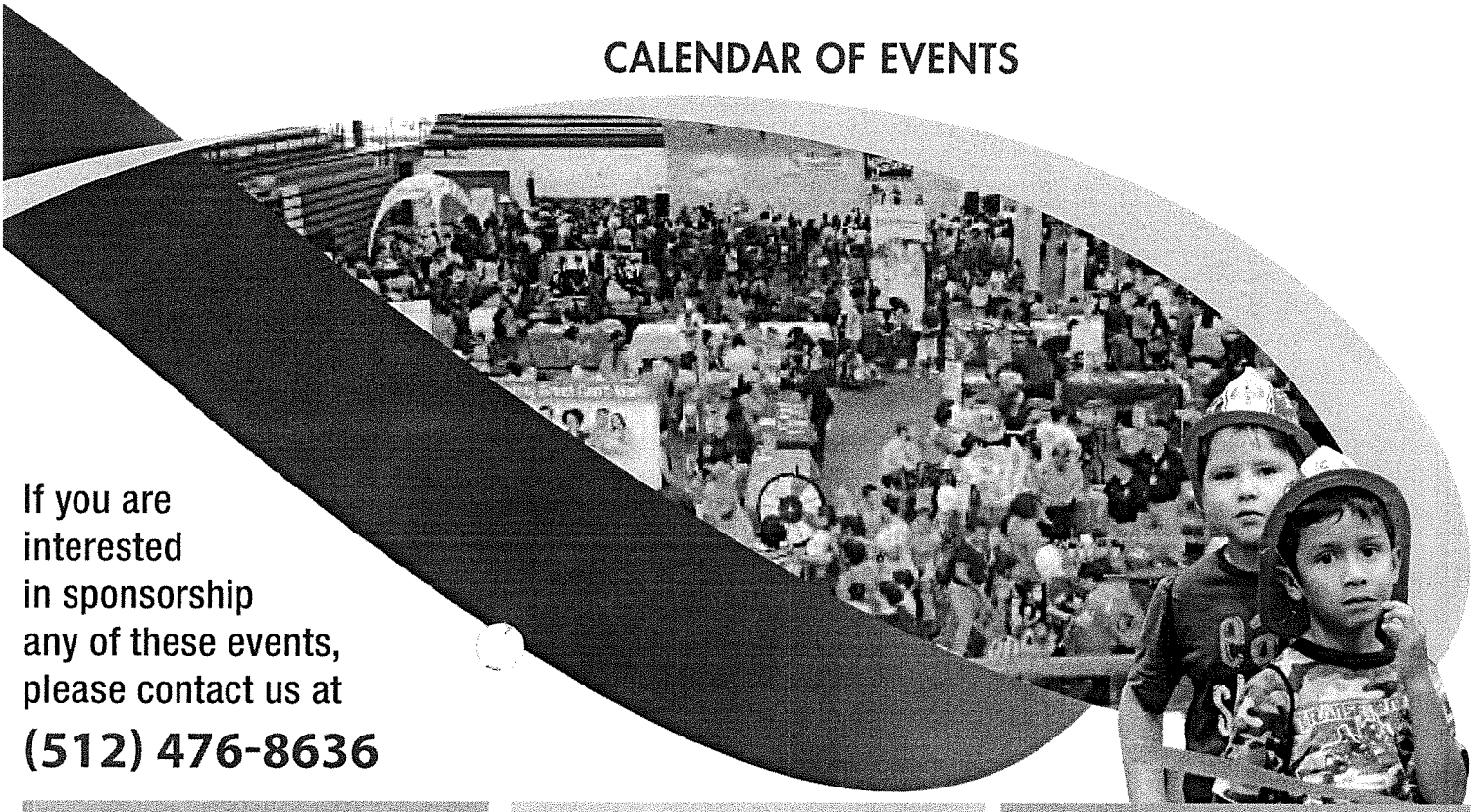


SPECIAL ANNUAL PUBLICATION

PRODUCED BY

El Mundo
AUSTIN

CALENDAR OF EVENTS



If you are interested in sponsorship any of these events, please contact us at

(512) 476-8636

FEBRUARY
- Bridal, XV & Prom Expo

MARCH
- Quinceañera Expo

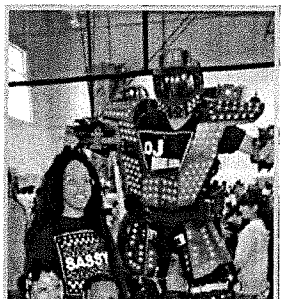
APRIL
- Kid's Festival

AUGUST
- Back to School Fest

SEPTEMBER
- Quince Expo

OCTOBER
- Boo The Flu

DECEMBER
- Christmas Toy Drive



RADIO SHOW

PRODUCED WEEKLY BY EL MUNDO NEWSPAPER

Keilah 106.5FM

THURSDAYS
5:30PM - 6PM.

E&W LAW
SOLUTIONS FOR BUSINESS & THE PLANET

Paul C. Sarahan
(512) 971-4156
paul.sarahan@eartheandwatergroup.com

September 8, 2023

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Supplemental Comments, Request for Public Meeting, and Request for Contested Case Hearing

Dear Chief Clerk Gharis:

I am submitting these supplemental comments, request for a public meeting, and request for a contested case hearing on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938. These supplemental comments are in addition to comments submitted on behalf of Shield Ranch on August 19, 2022, November 28, 2022, and March 23, 2023.

Shield Ranch noted in its prior comments that Blizexas had falsely represented to the agency that no bilingual education program was required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility. Shield Ranch understands that the Executive Director issued a Notice of Deficiency (NOD) addressing this issue, among others and, in response to the NOD, Blizexas acknowledged its prior statement in the application regarding the bilingual notice requirement was false. However, Blizexas, via its Representative, Erin Banks, certified it had "conducted a diligent search for a newspaper or publication of general circulation in both the municipality and county in which the facility is located or proposed to be located and was unable to publish the notice in the required alternative language because: A newspaper or publication could not be found in any of the alternative languages in which notice is required." Based perhaps on information provided by Shield Ranch in its March 23, 2023, comments showing there was a Spanish publication of general circulation in Hays County, the Executive Director required Blizexas to publish a combined Notice of Receipt of Application and Intent to Obtain Water Quality Permit (NORI) and Revised Notice of Application and Preliminary Decision for Water Quality Land Application Permit for Municipal Wastewater (NAPD). With the re-publication, the public comment period has opened again upon the date of that re-

publication, which was accomplished on August 10, 2023. As such, these comments are timely filed.

Shield Ranch greatly appreciates the Executive Director's decision to require Blizexas to re-publish notice in compliance with the Commission's rules. Proper notice is a hallmark of the Commission's permitting process. While proper notice through publication now appears to have finally been achieved, the companion to notice in the Commission's permitting process is the opportunity to be heard. This second hallmark has not been fully achieved, and will not be achieved, until the Executive Director schedules and holds a second public meeting regarding this matter.

A public meeting should be held for several reasons. First, in response to the re-publication, over 75 members of the affected community have requested a public meeting, and Shield Ranch adds its request for a public meeting to that number. This significant number of requests constitutes a "substantial or significant degree of public interest in an application" and therefore meets the Commission's criterion under which the Executive Director is required to hold a public meeting, under 30 Tex. Admin. Code § 55.154(c). Second, Shield Ranch understands Sen. Campbell has recently requested a public meeting regarding Blizexas's application. Under either criterion, the Executive Director is required to hold a public meeting. *Id.* Further, the Executive Director has the discretion to hold a public meeting at any time. *Id.* Given Blizexas's repeated failure to comply with the Commission's public notice requirements and its repeated misrepresentations to the Commission, which resulted in an important segment of the community being precluded from the opportunity to participate in the initial public meeting, it is appropriate for the Executive Director to provide that opportunity now that proper publication notice appears to have been achieved. Finally, the Executive Director has noted numerous deficiencies in Blizexas's application and the Executive Director has made significant changes to the draft permit. As a result, the community is now reviewing a substantially different draft permit based on numerous communications between Blizexas and the Executive Director. These circumstances provide additional justification for scheduling and convening a public meeting in this matter. Shield Ranch respectfully requests that the Executive Director schedule and provide notice of a public meeting so that all members of the community may have the opportunity to provide input on this application and draft permit.

In addition to requiring re-publication, the Executive Director has revised the proposed draft permit in this matter. Based on this revised draft permit, Shield Ranch has the following comments, which are in addition to those already submitted by Shield Ranch:

(1) Shield Ranch appreciates the Executive Director's addition of several Special Provisions to the draft permit. In particular, Shield Ranch greatly appreciates the inclusion of the requirements for monitoring the SADDs with suction lysimeters as recommended by TCEQ staff.

(2) The Executive Director has required Blizexas to add an onsite lift station and a second flow equalization basin. Shield Ranch respectfully requests that Blizexas be required

to provide to the public a revised site diagram so that the public may evaluate any impacts the additional equipment may have on the design of the venue and any resulting impacts on the affected community.

(3) Blizexas's projections regarding the amount of wastewater that would be generated at the music venue continue to be significantly underestimated. A 5,000-person venue will generate far more than 12,000 gallons of wastewater per event day. TCEQ's rule regarding Design Organic Loadings & Flows for new wastewater treatment facilities, 30 Tex. Admin. Code § 217.32(a)(3), assumes five gallons per person for recreational facilities. These facilities are broadly analogous with an entertainment venue. This design flow would result in generation of 25,000 gallons of wastewater per event day, more than double the level projected by Blizexas. This same TCEQ rule assumes a design flow of 7 to 10 gallons per meal for a restaurant. More information is needed to assess whether any of the assumptions made in the calculations for the application are reasonable including number of seats for the entertainment venue, number of employees, and whether there will be a restaurant, beverage, or lodging service associated with the venue. The Draft Permit's storage capacity requirements are directly related to Blizexas's projections. Because the projections underestimate the likely amount of wastewater that would be generated at the music venue, the storage capacity requirements are also insufficient.

(4) The application makes faulty assumptions in the calculations for the wastewater treatment system design. The peaking factor of one is used as a basis for the wastewater treatment system design information in the Draft Permit. This peaking factor assumes uniform flow into the treatment system, but flow associated with entertainment venues is highly variable. Therefore, the peaking factor of one that is used as a basis for the wastewater treatment system design information in the Draft Permit is not justified. The application also assumes influent with a BOD of 540 mg/L, but the application provides no explanation to justify the assumption. The higher the influent BOD, the more treatment is required to meet the effluent limitation. TCEQ's rule, at 30 Tex. Admin. Code § 217.32(a)(3) has 100 mg/L BOD for a recreational park and 1000 mg/L for a restaurant.

(5) The soil cover at the proposed site is very thin. *See* USDA's Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/app/WebSoilSurvey.aspx). USDA ranks the soils at the site (BtD, DeB, DoC, and RcD) as having "very limited" suitability for disposal of wastewater by irrigation. The Executive Director has recognized that Blizexas may need (we contend it is rather highly likely to need) to import soils sufficient to meet the proposed requirement that there be at least 12 inches of soil in place below the plane of the driplines. *See* Draft Permit, Special Provision No. 22.

Given the present knowledge of the existing soil condition at the proposed site, Shield Ranch respectfully requests that Blizexas be required to now include with its

application the plan the Executive Director proposes be submitted, if necessary, post-permit issuance, describing how the imported soils will be incorporated into the native soils and how soil erosion will be prevented in the affected areas. *See id.* In addition, Shield Ranch respectfully requests that this draft permit provision require Blizexas to identify the location from which the imported soils are to be obtained and establish that the imported soils are capable of achieving the objectives of the proposed permit, along with analytical data showing that the imported soils meet TCEQ soil standards for residential land use (30 Tex. Admin. Code ch. 350 – Texas Risk Reduction Program).

(6) The proposed project and its associated land application are incompatible with the geology and general conditions at the proposed site. As discussed above, there is a lack of sufficient soil at the site. As a result, vegetation is difficult to maintain under current site conditions, and erosion of the existing soil is a challenge. These known, existing conditions mandate submission of a plan to address these issues in advance of permit issuance so the affected community has an opportunity to analyze that plan and provide feedback regarding its adequacy.

The proposed site sits over a bed of limestone, which allows water to percolate into the aquifer and potentially contaminate drinking water from wells in the area. The area is known to have several karst features, which allow water (or wastewater) to quickly move through crevices and potentially reach groundwater without adequate filtration. These conditions run counter to general assumptions underlying land application authorizations, i.e., the soils act as further filtration of the applied wastewater, and the wastewater acts as a nutrient source for the vegetation present in the area of disposal. Where disposal occurs in areas with karst features, the wastewater moves too quickly through the soil to achieve filtration or to serve as a source of nutrients. These conditions are particularly troublesome given that the proposed site lies within the Edwards Aquifer Contributing Zone. The current Draft Permit does not include provisions that adequately protect local groundwater and surface water resources given the known conditions at the proposed site. While the Draft Permit includes monitoring provisions that may allow Blizexas and the Commission's regional staff to identify when there has been a system failure, the provisions are inadequate to prevent system failure in the first place, and the consequences of that failure are significant. The proposed project and its associated land application are simply incompatible with the known geology and general conditions of the proposed site. There are simply no design changes that can appropriately address and overcome this incompatibility, and Blizexas's application should therefore be rejected and returned.

(7) Given the site conditions and incompatibility discussed in Comment Nos. 5 and 6 above, Blizexas's application does not (and Shield Ranch contends cannot under any circumstances) adequately address measures that will be put in place to prevent overflows and discharges from the subsurface area drip dispersal system. As discussed above, the Draft Permit does not remedy this failure. The Draft Permit would require

Blizexas to submit, to the TCEQ Wastewater Permitting Section of the Water Quality Division, an engineering report, including plans and specifications, that meets the requirements in 30 TAC Chapter 222, Subsurface Drip Dispersal Systems, Subchapter D: Design Criteria. Given the site conditions and the significant consequences, including impacts to Barton Creek, that will result if there is an overflow or discharge, this engineering report should be submitted now, as part of the application, so the affected community has an opportunity to analyze that report and provide feedback regarding its adequacy.

(8) Blizexas has failed to adequately address the water resource issues at the proposed site, and the Draft Permit fails to remedy this failure. The proposed use of the site will require significant water usage to accommodate the anticipated patrons. Additional water resources will be required to maintain and operate the proposed land application waste disposal system, including vegetation maintenance. Additional water resources will be required to prevent odor and dust nuisance conditions. These issues are not adequately addressed in Blizexas's application. Further, given current drought conditions, which are reasonably predicted to recur, the proposed use of these water resources for the proposed purpose is incompatible with the area's need to maintain adequate water resources for human consumption and other already-existing uses.

(9) For the reasons set forth above, as well as those set forth in Shield Ranch's previously submitted comments, Shield Ranch respectfully requests that the Executive Director reconsider the preliminary decision in this matter and instead reject and return Blizexas's application for failing to meet all applicable requirements, and because the proposed use is incompatible with the conditions at the site and in the surrounding area.

(10) Without waiving its objections to the issuance of the permit, Shield Ranch has suggested improvements for particular provisions included within the Draft Permit, as follows:

a. Effluent Limitations and Monitoring Requirements B. Monitoring Requirements: Due to the potential for impacts to surface water and off-site properties, Shield Ranch requests that *E. coli* monitoring be increased from one per quarter to one per month.

b. Special Provision 9.b: Due to the potential for impacts to surface water and off-site properties, Shield Ranch requests that field checks at the drip irrigation fields and downgradient of the fields be increased from quarterly to monthly.

c. Special Provision 9.k. Shield Ranch requests clarification of the wording. The provision states that the procedure for implementation of corrective measures "may be required by the Executive Director". Shield Ranch recommends that the phrase "may be required by the Executive Director" be removed as it implies that the procedure does not need to be developed until requested by the

executive director. This could result in delays in addressing wastewater appearing in seeps, springs, or migrating in the soil horizon outside the drip systems.

d. Special Provision No. 21: Shield Ranch does not understand the provision as drafted and its wording should be clarified.

e. Special Provision No. 26: Shield Ranch asserts that Blizexas should be prohibited from applying effluent for irrigation when the ground is frozen, as well as when the ground is saturated. This was recommended by the TCEQ Water Quality Assessment Team in an email, dated May 4, 2022, from Alan Barraza to Firoj Vahora.

f. Special Provision Nos. 33-35: In each case, these Special Provisions fail to include a date by which Blizexas is required to complete the required action.

    i. No. 33: Shield Ranch asserts that Blizexas should be required to notify the TCEQ Regional Office upon its completion of the construction of berms, swales or other engineering controls and obtain the Commission's approval of the adequacy of these controls prior to beginning operation of any portion of the subsurface area drip disposal system.

    ii. Nos. 34-35: Shield Ranch asserts that Blizexas should be required to perform the actions required by these provisions prior to beginning construction of any unit proposed to be authorized under the permit. Further, Blizexas should be required to notify the TCEQ Regional Office upon its completion of each required action and obtain the Commission's approval of the adequacy of its performance of each required action.

g. Special Provision No. 36: Shield Ranch, the owner of the property north of the proposed venue, respectfully requests an increased buffer distance to allow a factor of safety in the event that wastewater appears in seeps, springs, or migrates in the soil horizon outside the drip systems (see geology discussion in Comment 6). The increased buffer is also required under 30 Tex. Admin. Code § 309.13(e), which states wastewater treatment plant units may not be located closer than 150 feet to the nearest property line in order to qualify as a compliance requirement to abate and control a nuisance of odor. Blizexas only proposes as its method for abating and controlling odor nuisance the use of a buffer zone. Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its permit application to ensure that all of its SADDS

units are located at least 150 feet from the nearest property line. See Shield Ranch Comment, dated August 19, 2022, Comment No. 6.

Shield Ranch respectfully submits these supplemental comments and requests that the Executive Director reconsider whether a draft permit is appropriate and, if so, whether certain provisions require amendment. Shield Ranch further requests that the Executive Director schedule and convene a public meeting. Finally, as previously requested, Shield Ranch respectfully requests that a contested case hearing be held in this matter so that Shield Ranch and the many in the surrounding area that would be directly affected by the proposed operation may have the opportunity to fully litigate each of the issues raised here.

Paul C. Sarahan

E&W LAW
SOLUTIONS FOR BUSINESS & THE PLANET

Paul C. Sarahan
(512) 971-4156
paul.sarahan@eartheandwatergroup.com

January 26, 2024

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Supplemental Comments

Dear Chief Clerk Gharis:

I am submitting these supplemental comments on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938. These supplemental comments are in addition to comments and a request for contested case hearing submitted on behalf of Shield Ranch on August 19, 2022, November 28, 2022, March 23, 2023, and September 8, 2023.

Shield Ranch has noted in its prior comments that there are numerous significant issues that merit denial of Blizexas's permit application. These issues include, but are not limited to: (1) the permit application has several inaccuracies that have yet to be corrected; (2) the proposed drip fields are insufficiently-sized and inappropriately-located; (3) the design of the site will allow for stormwater inflows into the drip fields; (4) these stormwater inflows will cause overflows from the drip fields resulting in contamination of groundwater and surface waters; (5) the geology of the site, which includes limestone and karst features, is incompatible with the proposed land application; (6) the application significantly underestimates the amount of wastewater that will be generated at the proposed site; (7) the application proposes insufficient storage capacity to properly handle the amount of wastewater that will be generated at the proposed site; (8) the application proposes inadequate nuisance odor abatement measures; (9) the proposed buffer between the drip fields and adjacent properties is insufficient and does not comply with applicable requirements; (10) the application's sewage sludge solids management plan, the Recharge Feature Plan, the Soil Evaluation, the Site Preparation Plan, and the Soil Sampling and Testing do not comply with applicable requirements; (11) the application has inadequate provisions for ensuring sufficient water resources to maintain vegetation and prevent dust nuisance emissions; (12) the operations will endanger local groundwater supplies that are used by neighbors for domestic and livestock

purposes; (13) the proposed discharges will negatively impact Barton Creek; (14) the application includes insufficient information regarding Blizexas's plans and capability to respond to malfunctions in the Plant's equipment; (15) the application makes faulty assumptions in the calculations for the wastewater treatment system design; and (16) the application fails to include an engineering report, including plans and specifications, that meets the requirements in 30 TAC Chapter 222, Subsurface Drip Dispersal Systems, Subchapter D: Design Criteria.

In addition, Shield Ranch agrees with and adopts Greater Edwards Aquifer Alliance's comment requesting that the agency impose discharge limits for Nitrogen and Phosphorus from any authorized discharge and decrease the permitted discharge limits for Total Suspended Solids ("TSS") and Biochemical Oxygen Demand ("BOD"). Specifically, Shield Ranch requests that the draft permit be revised to impose a maximum limit of 5 mg/l for both TSS and BOD; 2 mg/l Ammonia-Nitrogen (NH3-N); and 1 mg/l for Total Phosphorus.

Further, the proposed impervious cover at 66.45% of the site under the available site design documents is unacceptable. Such a design heightens the potential for stormwater overflows into the proposed drip fields and increases the likelihood of overflows out of those drip fields resulting in contamination of groundwater and surface waters. This concern is exacerbated by the inadequacy of the post-construction stormwater control and detention measures proposed by Blizexas.

For these and many other reasons, the requested permit should not be granted. If a permit is to eventually be granted, Shield Ranch requests that significant changes be made to the proposed draft permit to address Shield Ranch's comments, as well as those made by several community groups and members that will be directly affected by Blizexas's proposed operations.

Paul C. Sarahan

TCEQ Registration Form

#1

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Paul Sarahan

Mailing Address: 6801 Jester Wild Dr.

Physical Address (if different): _____

City/State: Austin Zip: 78750

This information is subject to public disclosure under the Texas Public Information Act

Email: Paul.Sarahan@earthandwatergroup.com

Phone Number: (512) 971-4156

- Are you here today representing a municipality, legislator, agency, or group? ☑ Yes ☐ No

  If yes, which one? Shield Ranch

☐ **Please add me to the mailing list.**

☑ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

1/29/24

Office of Chief Clerk

Re: Blizzcxas TLAP application

Please include a prohibition on land application if a significant rain is predicted to occur in the next three days. In determining quantity of what constitutes "significant" rain, require calculations of amount that can be handled within a drip field without an overflow. Applicant should be required to prepare and justify this calculation

Paul C. Sarahan
Counsel for Shield Ranch

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 11:40 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Supplemental Comments 1.26.24 - Final.pdf

H

From: paul.sarahan@earthandwatergroup.com <paul.sarahan@earthandwatergroup.com>
Sent: Friday, January 26, 2024 4:16 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Paul C. Sarahan

EMAIL: paul.sarahan@earthandwatergroup.com

COMPANY: Earth & Water Law, LLC

ADDRESS: 6801 JESTER WILD DR
AUSTIN TX 78750-8173

PHONE: 5129714156

FAX:

COMMENTS: See attached comments on behalf of Shield Ranch.

E&W LAW
SOLUTIONS FOR BUSINESS & THE PLANET

Paul C. Sarahan
(512) 971-4156
paul.sarahan@eartheandwatergroup.com

January 26, 2024

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Supplemental Comments

Dear Chief Clerk Gharis:

I am submitting these supplemental comments on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938. These supplemental comments are in addition to comments and a request for contested case hearing submitted on behalf of Shield Ranch on August 19, 2022, November 28, 2022, March 23, 2023, and September 8, 2023.

Shield Ranch has noted in its prior comments that there are numerous significant issues that merit denial of Blizexas's permit application. These issues include, but are not limited to: (1) the permit application has several inaccuracies that have yet to be corrected; (2) the proposed drip fields are insufficiently-sized and inappropriately-located; (3) the design of the site will allow for stormwater inflows into the drip fields; (4) these stormwater inflows will cause overflows from the drip fields resulting in contamination of groundwater and surface waters; (5) the geology of the site, which includes limestone and karst features, is incompatible with the proposed land application; (6) the application significantly underestimates the amount of wastewater that will be generated at the proposed site; (7) the application proposes insufficient storage capacity to properly handle the amount of wastewater that will be generated at the proposed site; (8) the application proposes inadequate nuisance odor abatement measures; (9) the proposed buffer between the drip fields and adjacent properties is insufficient and does not comply with applicable requirements; (10) the application's sewage sludge solids management plan, the Recharge Feature Plan, the Soil Evaluation, the Site Preparation Plan, and the Soil Sampling and Testing do not comply with applicable requirements; (11) the application has inadequate provisions for ensuring sufficient water resources to maintain vegetation and prevent dust nuisance emissions; (12) the operations will endanger local groundwater supplies that are used by neighbors for domestic and livestock

purposes; (13) the proposed discharges will negatively impact Barton Creek; (14) the application includes insufficient information regarding Blizexas's plans and capability to respond to malfunctions in the Plant's equipment; (15) the application makes faulty assumptions in the calculations for the wastewater treatment system design; and (16) the application fails to include an engineering report, including plans and specifications, that meets the requirements in 30 TAC Chapter 222, Subsurface Drip Dispersal Systems, Subchapter D: Design Criteria.

In addition, Shield Ranch agrees with and adopts Greater Edwards Aquifer Alliance's comment requesting that the agency impose discharge limits for Nitrogen and Phosphorus from any authorized discharge and decrease the permitted discharge limits for Total Suspended Solids ("TSS") and Biochemical Oxygen Demand ("BOD"). Specifically, Shield Ranch requests that the draft permit be revised to impose a maximum limit of 5 mg/l for both TSS and BOD; 2 mg/l Ammonia-Nitrogen (NH3-N); and 1 mg/l for Total Phosphorus.

Further, the proposed impervious cover at 66.45% of the site under the available site design documents is unacceptable. Such a design heightens the potential for stormwater overflows into the proposed drip fields and increases the likelihood of overflows out of those drip fields resulting in contamination of groundwater and surface waters. This concern is exacerbated by the inadequacy of the post-construction stormwater control and detention measures proposed by Blizexas.

For these and many other reasons, the requested permit should not be granted. If a permit is to eventually be granted, Shield Ranch requests that significant changes be made to the proposed draft permit to address Shield Ranch's comments, as well as those made by several community groups and members that will be directly affected by Blizexas's proposed operations.

Paul C. Sarahan

Misty Botello

From: PUBCOMMENT-OCC
Sent: Friday, September 8, 2023 3:13 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Supplemental Comments and Request for Contested Case Hearing - September 8 20231.pdf

PM
RFR
H

From: paul.sarahan@earthandwatergroup.com <paul.sarahan@earthandwatergroup.com>
Sent: Friday, September 8, 2023 3:10 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Paul C. Sarahan

EMAIL: paul.sarahan@earthandwatergroup.com

COMPANY: Earth & Water Law, LLC

ADDRESS: 6801 JESTER WILD DR
AUSTIN TX 78750-8173

PHONE: 5129714156

FAX:

COMMENTS: Please see attached comments filed on behalf of Shield Ranch.

E&W LAW
SOLUTIONS FOR BUSINESS & THE PLANET

Paul C. Sarahan
(512) 971-4156
paul.sarahan@eartheandwatergroup.com

September 8, 2023

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Supplemental Comments, Request for Public Meeting, and Request for Contested Case Hearing

Dear Chief Clerk Gharis:

I am submitting these supplemental comments, request for a public meeting, and request for a contested case hearing on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938. These supplemental comments are in addition to comments submitted on behalf of Shield Ranch on August 19, 2022, November 28, 2022, and March 23, 2023.

Shield Ranch noted in its prior comments that Blizexas had falsely represented to the agency that no bilingual education program was required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility. Shield Ranch understands that the Executive Director issued a Notice of Deficiency (NOD) addressing this issue, among others and, in response to the NOD, Blizexas acknowledged its prior statement in the application regarding the bilingual notice requirement was false. However, Blizexas, via its Representative, Erin Banks, certified it had "conducted a diligent search for a newspaper or publication of general circulation in both the municipality and county in which the facility is located or proposed to be located and was unable to publish the notice in the required alternative language because: A newspaper or publication could not be found in any of the alternative languages in which notice is required." Based perhaps on information provided by Shield Ranch in its March 23, 2023, comments showing there was a Spanish publication of general circulation in Hays County, the Executive Director required Blizexas to publish a combined Notice of Receipt of Application and Intent to Obtain Water Quality Permit (NORI) and Revised Notice of Application and Preliminary Decision for Water Quality Land Application Permit for Municipal Wastewater (NAPD). With the re-publication, the public comment period has opened again upon the date of that re-

publication, which was accomplished on August 10, 2023. As such, these comments are timely filed.

Shield Ranch greatly appreciates the Executive Director's decision to require Blizexas to re-publish notice in compliance with the Commission's rules. Proper notice is a hallmark of the Commission's permitting process. While proper notice through publication now appears to have finally been achieved, the companion to notice in the Commission's permitting process is the opportunity to be heard. This second hallmark has not been fully achieved, and will not be achieved, until the Executive Director schedules and holds a second public meeting regarding this matter.

A public meeting should be held for several reasons. First, in response to the re-publication, over 75 members of the affected community have requested a public meeting, and Shield Ranch adds its request for a public meeting to that number. This significant number of requests constitutes a "substantial or significant degree of public interest in an application" and therefore meets the Commission's criterion under which the Executive Director is required to hold a public meeting, under 30 Tex. Admin. Code § 55.154(c). Second, Shield Ranch understands Sen. Campbell has recently requested a public meeting regarding Blizexas's application. Under either criterion, the Executive Director is required to hold a public meeting. *Id.* Further, the Executive Director has the discretion to hold a public meeting at any time. *Id.* Given Blizexas's repeated failure to comply with the Commission's public notice requirements and its repeated misrepresentations to the Commission, which resulted in an important segment of the community being precluded from the opportunity to participate in the initial public meeting, it is appropriate for the Executive Director to provide that opportunity now that proper publication notice appears to have been achieved. Finally, the Executive Director has noted numerous deficiencies in Blizexas's application and the Executive Director has made significant changes to the draft permit. As a result, the community is now reviewing a substantially different draft permit based on numerous communications between Blizexas and the Executive Director. These circumstances provide additional justification for scheduling and convening a public meeting in this matter. Shield Ranch respectfully requests that the Executive Director schedule and provide notice of a public meeting so that all members of the community may have the opportunity to provide input on this application and draft permit.

In addition to requiring re-publication, the Executive Director has revised the proposed draft permit in this matter. Based on this revised draft permit, Shield Ranch has the following comments, which are in addition to those already submitted by Shield Ranch:

(1) Shield Ranch appreciates the Executive Director's addition of several Special Provisions to the draft permit. In particular, Shield Ranch greatly appreciates the inclusion of the requirements for monitoring the SADDs with suction lysimeters as recommended by TCEQ staff.

(2) The Executive Director has required Blizexas to add an onsite lift station and a second flow equalization basin. Shield Ranch respectfully requests that Blizexas be required

to provide to the public a revised site diagram so that the public may evaluate any impacts the additional equipment may have on the design of the venue and any resulting impacts on the affected community.

(3) Blizexas's projections regarding the amount of wastewater that would be generated at the music venue continue to be significantly underestimated. A 5,000-person venue will generate far more than 12,000 gallons of wastewater per event day. TCEQ's rule regarding Design Organic Loadings & Flows for new wastewater treatment facilities, 30 Tex. Admin. Code § 217.32(a)(3), assumes five gallons per person for recreational facilities. These facilities are broadly analogous with an entertainment venue. This design flow would result in generation of 25,000 gallons of wastewater per event day, more than double the level projected by Blizexas. This same TCEQ rule assumes a design flow of 7 to 10 gallons per meal for a restaurant. More information is needed to assess whether any of the assumptions made in the calculations for the application are reasonable including number of seats for the entertainment venue, number of employees, and whether there will be a restaurant, beverage, or lodging service associated with the venue. The Draft Permit's storage capacity requirements are directly related to Blizexas's projections. Because the projections underestimate the likely amount of wastewater that would be generated at the music venue, the storage capacity requirements are also insufficient.

(4) The application makes faulty assumptions in the calculations for the wastewater treatment system design. The peaking factor of one is used as a basis for the wastewater treatment system design information in the Draft Permit. This peaking factor assumes uniform flow into the treatment system, but flow associated with entertainment venues is highly variable. Therefore, the peaking factor of one that is used as a basis for the wastewater treatment system design information in the Draft Permit is not justified. The application also assumes influent with a BOD of 540 mg/L, but the application provides no explanation to justify the assumption. The higher the influent BOD, the more treatment is required to meet the effluent limitation. TCEQ's rule, at 30 Tex. Admin. Code § 217.32(a)(3) has 100 mg/L BOD for a recreational park and 1000 mg/L for a restaurant.

(5) The soil cover at the proposed site is very thin. *See* USDA's Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/app/WebSoilSurvey.aspx). USDA ranks the soils at the site (BtD, DeB, DoC, and RcD) as having "very limited" suitability for disposal of wastewater by irrigation. The Executive Director has recognized that Blizexas may need (we contend it is rather highly likely to need) to import soils sufficient to meet the proposed requirement that there be at least 12 inches of soil in place below the plane of the driplines. *See* Draft Permit, Special Provision No. 22.

Given the present knowledge of the existing soil condition at the proposed site, Shield Ranch respectfully requests that Blizexas be required to now include with its

application the plan the Executive Director proposes be submitted, if necessary, post-permit issuance, describing how the imported soils will be incorporated into the native soils and how soil erosion will be prevented in the affected areas. *See id.* In addition, Shield Ranch respectfully requests that this draft permit provision require Blizexas to identify the location from which the imported soils are to be obtained and establish that the imported soils are capable of achieving the objectives of the proposed permit, along with analytical data showing that the imported soils meet TCEQ soil standards for residential land use (30 Tex. Admin. Code ch. 350 – Texas Risk Reduction Program).

(6) The proposed project and its associated land application are incompatible with the geology and general conditions at the proposed site. As discussed above, there is a lack of sufficient soil at the site. As a result, vegetation is difficult to maintain under current site conditions, and erosion of the existing soil is a challenge. These known, existing conditions mandate submission of a plan to address these issues in advance of permit issuance so the affected community has an opportunity to analyze that plan and provide feedback regarding its adequacy.

The proposed site sits over a bed of limestone, which allows water to percolate into the aquifer and potentially contaminate drinking water from wells in the area. The area is known to have several karst features, which allow water (or wastewater) to quickly move through crevices and potentially reach groundwater without adequate filtration. These conditions run counter to general assumptions underlying land application authorizations, i.e., the soils act as further filtration of the applied wastewater, and the wastewater acts as a nutrient source for the vegetation present in the area of disposal. Where disposal occurs in areas with karst features, the wastewater moves too quickly through the soil to achieve filtration or to serve as a source of nutrients. These conditions are particularly troublesome given that the proposed site lies within the Edwards Aquifer Contributing Zone. The current Draft Permit does not include provisions that adequately protect local groundwater and surface water resources given the known conditions at the proposed site. While the Draft Permit includes monitoring provisions that may allow Blizexas and the Commission's regional staff to identify when there has been a system failure, the provisions are inadequate to prevent system failure in the first place, and the consequences of that failure are significant. The proposed project and its associated land application are simply incompatible with the known geology and general conditions of the proposed site. There are simply no design changes that can appropriately address and overcome this incompatibility, and Blizexas's application should therefore be rejected and returned.

(7) Given the site conditions and incompatibility discussed in Comment Nos. 5 and 6 above, Blizexas's application does not (and Shield Ranch contends cannot under any circumstances) adequately address measures that will be put in place to prevent overflows and discharges from the subsurface area drip dispersal system. As discussed above, the Draft Permit does not remedy this failure. The Draft Permit would require

Blizexas to submit, to the TCEQ Wastewater Permitting Section of the Water Quality Division, an engineering report, including plans and specifications, that meets the requirements in 30 TAC Chapter 222, Subsurface Drip Dispersal Systems, Subchapter D: Design Criteria. Given the site conditions and the significant consequences, including impacts to Barton Creek, that will result if there is an overflow or discharge, this engineering report should be submitted now, as part of the application, so the affected community has an opportunity to analyze that report and provide feedback regarding its adequacy.

(8) Blizexas has failed to adequately address the water resource issues at the proposed site, and the Draft Permit fails to remedy this failure. The proposed use of the site will require significant water usage to accommodate the anticipated patrons. Additional water resources will be required to maintain and operate the proposed land application waste disposal system, including vegetation maintenance. Additional water resources will be required to prevent odor and dust nuisance conditions. These issues are not adequately addressed in Blizexas's application. Further, given current drought conditions, which are reasonably predicted to recur, the proposed use of these water resources for the proposed purpose is incompatible with the area's need to maintain adequate water resources for human consumption and other already-existing uses.

(9) For the reasons set forth above, as well as those set forth in Shield Ranch's previously submitted comments, Shield Ranch respectfully requests that the Executive Director reconsider the preliminary decision in this matter and instead reject and return Blizexas's application for failing to meet all applicable requirements, and because the proposed use is incompatible with the conditions at the site and in the surrounding area.

(10) Without waiving its objections to the issuance of the permit, Shield Ranch has suggested improvements for particular provisions included within the Draft Permit, as follows:

a. Effluent Limitations and Monitoring Requirements B. Monitoring Requirements: Due to the potential for impacts to surface water and off-site properties, Shield Ranch requests that *E. coli* monitoring be increased from one per quarter to one per month.

b. Special Provision 9.b: Due to the potential for impacts to surface water and off-site properties, Shield Ranch requests that field checks at the drip irrigation fields and downgradient of the fields be increased from quarterly to monthly.

c. Special Provision 9.k. Shield Ranch requests clarification of the wording. The provision states that the procedure for implementation of corrective measures "may be required by the Executive Director". Shield Ranch recommends that the phrase "may be required by the Executive Director" be removed as it implies that the procedure does not need to be developed until requested by the

executive director. This could result in delays in addressing wastewater appearing in seeps, springs, or migrating in the soil horizon outside the drip systems.

d. Special Provision No. 21: Shield Ranch does not understand the provision as drafted and its wording should be clarified.

e. Special Provision No. 26: Shield Ranch asserts that Blizexas should be prohibited from applying effluent for irrigation when the ground is frozen, as well as when the ground is saturated. This was recommended by the TCEQ Water Quality Assessment Team in an email, dated May 4, 2022, from Alan Barraza to Firoj Vahora.

f. Special Provision Nos. 33-35: In each case, these Special Provisions fail to include a date by which Blizexas is required to complete the required action.

    i. No. 33: Shield Ranch asserts that Blizexas should be required to notify the TCEQ Regional Office upon its completion of the construction of berms, swales or other engineering controls and obtain the Commission's approval of the adequacy of these controls prior to beginning operation of any portion of the subsurface area drip disposal system.

    ii. Nos. 34-35: Shield Ranch asserts that Blizexas should be required to perform the actions required by these provisions prior to beginning construction of any unit proposed to be authorized under the permit. Further, Blizexas should be required to notify the TCEQ Regional Office upon its completion of each required action and obtain the Commission's approval of the adequacy of its performance of each required action.

g. Special Provision No. 36: Shield Ranch, the owner of the property north of the proposed venue, respectfully requests an increased buffer distance to allow a factor of safety in the event that wastewater appears in seeps, springs, or migrates in the soil horizon outside the drip systems (see geology discussion in Comment 6). The increased buffer is also required under 30 Tex. Admin. Code § 309.13(e), which states wastewater treatment plant units may not be located closer than 150 feet to the nearest property line in order to qualify as a compliance requirement to abate and control a nuisance of odor. Blizexas only proposes as its method for abating and controlling odor nuisance the use of a buffer zone. Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its permit application to ensure that all of its SADDS

units are located at least 150 feet from the nearest property line. See Shield Ranch Comment, dated August 19, 2022, Comment No. 6.

Shield Ranch respectfully submits these supplemental comments and requests that the Executive Director reconsider whether a draft permit is appropriate and, if so, whether certain provisions require amendment. Shield Ranch further requests that the Executive Director schedule and convene a public meeting. Finally, as previously requested, Shield Ranch respectfully requests that a contested case hearing be held in this matter so that Shield Ranch and the many in the surrounding area that would be directly affected by the proposed operation may have the opportunity to fully litigate each of the issues raised here.

Paul C. Sarahan

Christina Bourque

From:	PUBCOMMENT-OCC
Sent:	Tuesday, November 29, 2022 8:16 AM
To:	PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject:	FW: Public comment on Permit Number WQ0016111001
Attachments:	Supplemental Comments and Request for Contested Case Hearing.pdf

H

From: psarahan@enochkever.com <psarahan@enochkever.com>
Sent: Monday, November 28, 2022 3:45 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Paul Sarahan

EMAIL: psarahan@enochkever.com

COMPANY: Shield Ranch

ADDRESS: 7600 N CAPITAL OF TEXAS HWY Building B, Suite 200
AUSTIN TX 78731-1184

PHONE: 5126151200

FAX:

COMMENTS: Please see the attached supplemental comments and request for contested case hearing filed on behalf of Shield Ranch.

ENOCH KEVER

Paul C. Sarahan
(512) 615-1215
psarahan@enochkever.com

November 28, 2022

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Supplemental Comments and Request for Contested Case Hearing

Dear Chief Clerk Gharis:

I am submitting these supplemental comments and request for a contested case hearing on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938. These supplemental comments are in addition to comments submitted on behalf of Shield Ranch on August 19, 2022. In addition to its initial comments, Shield Ranch submits the following:

(1) Shield Ranch noted in its initial comment that, in Administrative Report 1.0, Item 8.e. of the application, Blizexas checked "No" in response to the application's question - "Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?" The Commission's rules, 30 Tex. Admin. Code §§ 39.418, 39.419, 39.405, and 39.426, require publication in an alternative language if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available. The Site is located within the attendance zone for the Dripping Springs Elementary School. Dripping Springs Elementary hosts the dual-language one-way bilingual program in Spanish for Dripping Springs Independent School District (*see* https://www.dsisdtx.us/domain/282). Blizexas has failed to publish either its Notice of Receipt of Application and Intent to Obtain Permit (NORI) or its NAPD in Spanish.

Shield Ranch respectfully requests that the Executive Director require Blizexas to comply with 30 Tex. Admin. Code § 39.426 and re-publish the required notices in Spanish, and re-start the public comment period upon the date of that re-publication. In support of Shield Ranch's comment, Shield Ranch is supplying the Executive Director with additional information confirming: (1) Dripping Springs Elementary

School is the elementary school nearest to property located approximately 0.25 mile east of the intersection of Crumley Ranch Road and Fitzhugh Road, in Hays County, Texas 78737; (2) Dripping Springs Elementary School provides a bilingual education program pursuant to Texas Education Code, Chapter 29, Subchapter B, and 19 TAC § 89.1205(a) (relating to Required Bilingual Education and English as a Second Language Programs); and (3) Students are enrolled in a bilingual education program at Dripping Springs Elementary School.

TCEQ's rules, 30 TAC §§ 39.418, 39.419, 39.405, and 39.426, require publication in an alternative language (in this case, Spanish) if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available. *See* Tex. Educ. Code § 29.053, 29 TAC §§ 89.1205 and 89.1203(7). As part of its application, Blizexas's CEO certified under penalty of law that a bilingual education program is not required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility. See pages 7 and 13 of the Blizexas application, which I have attached. As a result of this certification, Blizexas was not required by TCEQ to publish notice of its application or of TCEQ's proposed draft permit in Spanish. The notices were only published in English.

The Site is located within the attendance zone for the Dripping Springs Elementary School. Dripping Springs Elementary hosts the dual-language one-way bilingual program in Spanish for Dripping Springs Independent School District (*see* https://www.dsisdtx.us/domain/282). Ms. Marcia Holsonbake, the Dripping Springs ISD's ESL/Bilingual Program Coordinator, confirmed that the district was required to offer a bilingual program based on the number of non-English speaking students. Dripping Springs ISD has had the program for 10 years. Dripping Springs Elementary's ESL/Bilingual program is run by Jamie Eubanks, who can be reached at (512) 858-3700.

In addition, Dripping Springs ISD reported it had 341 students in its Bilingual/ESL Education programs in the 2020-2021 school year. *See* DSISD Texas Academic Performance Report, relevant excerpts of which are attached. *See also* https:/rptsvr1.tea.texas.gov/cgi/sas/broker?_service=marykay&_program=perfrept.perfmast.sas&_debug=0&ccyy=2021&lev=D&id=105904&prgopt=reports%2Ftapr%2Fpaper_tapr.sas. Of these, 129 students participated in Dripping Springs Elementary's Bilingual/ESL Education program. *See* DSISD Texas Academic Performance Report for Dripping Springs Elementary, relevant excerpts of which are attached. *See also* https:/rptsvr1.tea.texas.gov/cgi/sas/broker?_service=marykay&_program=perfrept.perfmast.sas&_debug=0&ccyy=2021&lev=C&id=105904101&prgopt=reports%2Ftapr%2Fpaper_tapr.sas

Although it is not Shield Ranch's obligation to provide additional information to assist Blizexas in complying with its publication requirements, it is Shield Ranch's

understanding that the *El Mundo* newspaper serves Austin, San Antonio and surrounding areas, and delivers weekly to locations within Hays County.

Under TCEQ's rules, Blizexas had an obligation to publish notice of its application and of the draft permit in Spanish. Blizexas should be required to comply with 30 Tex. Admin. Code § 39.426 and re-publish the required notices in Spanish, and TCEQ should re-start the public comment period upon the date of that re-publication.

(2) A report produced by Baylor University researchers noted that Barton Creek's nutrient levels "were consistent with a high-quality, reference stream in the Edwards Plateau or Cross Timbers Ecoregions of central Texas, with total and orthophosphate (PO_4-P)-phosphorus values < 10 µg/L, total nitrogen (TN) at or below 300 ug/L, nitrite+nitrate-N values at or below 200 µg/L, and ammonium-N < 10 µg/L. All of these values represent high quality, low nutrient conditions."[1] Blizexas's application fails to account for and ensure the protection of Barton Creek's status as a high-quality, low-nutrient stream.

The proposed discharges sought to be permitted under Blizexas's pending application would negatively impact Barton Creek. Blizexas's permit application proposes inadequate on-site storage prior to land application. The soils in which Blizexas's proposed land application would be conducted are too thin to receive the proposed volume of wastewater and will become saturated and be particularly affected in rainy conditions, leading to uncontrolled runoff that will flow into Barton Creek.

In addition, Blizexas's application includes insufficient information regarding Blizexas's plans and capability to respond to malfunctions in the Plant's equipment. Such malfunctions will result in the discharge of untreated water that could have several, interrelated negative results, including: (1) discharge and runoff that was not anticipated with resulting impacts to the creek, (2) failure of irrigation fields to capture and process application of treated effluent, (3) soil not properly retaining, i.e., leaching, waste, and (4) nutrient levels that could lead to algae blooms in the creek.

(3) Shield Ranch is an affected party in relation to Blizexas's application and proposed operation. Shield Ranch's property is immediately adjacent to the location of Blizexas's proposed operation. Blizexas proposes to locate several drip fields in the direct vicinity of the property line between Blizexas's property and Shield Ranch's property. Shield Ranch will be directly affected by odors emanating from Blizexas's proposed wastewater facilities. Further, given the immediate proximity of the proposed drip fields to Shield Ranch's property line and the thin soils in this area, it is anticipated

[1] *See* Dr. R. S. King, Dr. J. A. Back, "Bioassessment of four Hill Country streams threatened by proposed municipal wastewater discharges," Oct. 2020.

that Shield Ranch will be subjected to runoff from Blizexas's drip fields and will suffer impacts personal and specific to Shield Ranch.

Shield Ranch is an affected party due to its immediate proximity to Blizexas's proposed operation. A reasonable relationship exists between Shield Ranch's interest in the likely runoff and odors that will result from Blizexas's regulated wastewater collection, storage, and disposal activities. Shield Ranch will very likely be impacted by Blizexas's regulated wastewater collection, storage, and disposal activities. Blizexas's proposed operation will impact the health and safety of those utilizing Shield Ranch, and will impact Shield Ranch's ability to use its property, particularly that portion of Shield Ranch that is in close vicinity of Blizexas's proposed operation. Due to runoff and odors emanating from Blizexas's operations, Shield Ranch's use of the natural resources on its property will also be impacted. Shield Ranch has timely submitted comments on the application in August 2022, and again here. These comments have not been withdrawn. For all of the reasons set forth above, Shield Ranch has a personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the application that is not common to members of the general public.

Shield Ranch respectfully submits these supplemental comments and requests that the Executive Director require Blizexas to amend its application and, as necessary, re-publish any required notices. Upon that amendment, Shield Ranch respectfully requests that the Executive Director determine whether Blizexas's application meets all applicable requirements and, if so, review the proposed draft permit and determine what changes are required in the proposed draft permit based on the amended application.

Based on its additional review of Blizexas's application, Shield Ranch has identified significant issues concerning whether the application meets all applicable requirements. As a result, Shield Ranch respectfully requests that a contested case hearing be held in this matter so that Shield Ranch may have the opportunity to fully litigate each of the issues raised here such that the State Office of Administration and, ultimately, the Commission may appropriately determine whether Blizexas's application and the draft permit meet all applicable requirements.

Sincerely,

Paul C. Sarahan

PCS/ln

Attachments

First and Last Name: Bill LeClerc

Credential (P.E, P.G., Ph.D., etc.):

Title: Director

Organization Name: Blizexas, LLC

Mailing Address: 258 Union Avenue

City, State, Zip Code: Los Gatos, CA 95032

Phone No.: 978-877-1798 Ext.: Fax No.:

E-mail Address: wleclerc@lexorbuilders.com

D. Public Viewing Information

If the facility or outfall is located in more than one county, a public viewing place for each county must be provided.

Public building name: Dripping Springs Community Library

Location within the building: Front Desk

Physical Address of Building: 501 Sportsplex Drive

City: Dripping Springs County: Hays

Contact Name: Librarian

Phone No.: 512-858-7825 Ext.:

E. Bilingual Notice Requirements:

This information **is required** for **new, major amendment, and renewal applications**. It is not required for minor amendment or minor modification applications.

This section of the application is only used to determine if alternative language notices will be needed. Complete instructions on publishing the alternative language notices will be in your public notice package.

Please call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine whether an alternative language notices are required.

1. Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?

   ☐ Yes ☒ No

   If **no**, publication of an alternative language notice is not required; **skip to** Section 9 below.

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

   ☐ Yes ☐ No

Section 14. Signature Page (Instructions Page 39)

If co-applicants are necessary, each entity must submit an original, separate signature page.

Permit Number:

Applicant: Blizexas, LLC

Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code § 305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signatory name (typed or printed): William Hirschman

Signatory title: CEO

Signature: _____ Date: 12/2/2021

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

Subscribed and Sworn to before me ~~by the said~~ on this 2nd day of Dec, 2021
by William Hirschman proved to ~~me~~ on the basis of satisfactory evidence to be the person(s) who appeared before me
on this N/A day of N/A, 20 N/A.

My commission expires on the 3rd day of Dec, 20 24.

_____
Notary Public

ENISA HALILCEVIC
Notary Public - California
Santa Clara County
Commission # 2338982
My Comm. Expires Dec 3, 2024

[SEAL]

_____
County, Texas Santa Clara, California

2020-21 Texas Academic Performance Report (TAPR)

District Name: DRIPPING SPRINGS ISD

District Number: 105904

2021 Accountability Rating: Not Rated: Declared State of Disaster

2021 Special Education Determination Status:

Meets Requirements

Texas Education Agency
2020-21 Student Information (TAPR)
DRIPPING SPRINGS ISD (105904) - HAYS COUNTY

	Membership				Enrollment			
	District		State		District		State	
Student Information	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Students w/ Dyslexia	498	6.9%	241,070	4.5%	498	6.8%	241,197	4.5%
Foster Care	20	0.3%	17,033	0.3%	20	0.3%	17,090	0.3%
Homeless	8	0.1%	57,709	1.1%	8	0.1%	57,811	1.1%
Immigrant	75	1.0%	108,025	2.0%	75	1.0%	108,092	2.0%
Migrant	4	0.1%	16,657	0.3%	4	0.1%	16,733	0.3%
Title I	1,568	21.6%	3,457,855	64.5%	1,580	21.7%	3,464,887	64.5%
Military Connected	66	0.9%	144,596	2.7%	66	0.9%	144,683	2.7%
At-Risk	1,403	19.3%	2,634,284	49.2%	1,405	19.3%	2,636,849	49.1%
Students by Instructional Program:								
Bilingual/ESL Education	341	4.7%	1,123,936	21.0%	341	4.7%	1,124,413	20.9%
Gifted and Talented Education	478	6.6%	443,781	8.3%	478	6.6%	443,849	8.3%
Special Education	827	11.4%	595,885	11.1%	854	11.7%	605,043	11.3%
Students with Disabilities by Type of Primary Disability:								
Total Students with Disabilities	827		595,885					
By Type of Primary Disability								
Students with Intellectual Disabilities	278	33.6%	253,352	42.5%				
Students with Physical Disabilities	211	25.5%	127,106	21.3%				
Students with Autism	70	8.5%	83,737	14.1%				
Students with Behavioral Disabilities	260	31.4%	122,624	20.6%				
Students with Non-Categorical Early Childhood	8	1.0%	9,066	1.5%				
Mobility (2019-20):								
Total Mobile Students	338	5.1%	726,083	13.8%				
By Ethnicity:								
African American	9	0.1%	148,832	2.8%				
Hispanic	85	1.3%	372,491	7.1%				
White	218	3.3%	160,748	3.1%				
American Indian	1	0.0%	2,944	0.1%				
Asian	7	0.1%	18,370	0.4%				
Pacific Islander	0	0.0%	1,484	0.0%				
Two or More Races	18	0.3%	21,214	0.4%				
Count and Percent of Special Ed Students who are Mobile	59	7.3%	102,036	16.5%				
Count and Percent of EB Students/EL who are Mobile	21	6.8%	137,410	13.6%				
Count and Percent of Econ Dis Students who are Mobile	89	13.4%	508,900	16.0%				
Student Attrition (2019-20):								
Total Student Attrition	574	10.0%	700,130	16.6%				

2020-21 Texas Academic Performance Report (TAPR)

District Name: DRIPPING SPRINGS ISD

Campus Name: DRIPPING SPRINGS EL

Campus Number: 105904101

2021 Accountability Rating: Not Rated: Declared State of Disaster

Texas Education Agency

2020-21 Student Information (TAPR)

DRIPPING SPRINGS EL (105904101) - DRIPPING SPRINGS ISD - HAYS COUNTY

	Membership				Enrollment			
	Campus				Campus			
Student Information	**Count**	**Percent**	**District**	**State**	**Count**	**Percent**	**District**	**State**
Students w/ Dyslexia	43	5.0%	6.9%	4.5%	43	4.9%	6.8%	4.5%
Foster Care	2	0.2%	0.3%	0.3%	2	0.2%	0.3%	0.3%
Homeless	0	0.0%	0.1%	1.1%	0	0.0%	0.1%	1.1%
Immigrant	34	3.9%	1.0%	2.0%	34	3.9%	1.0%	2.0%
Migrant	1	0.1%	0.1%	0.3%	1	0.1%	0.1%	0.3%
Title I	867	100.0%	21.6%	64.5%	875	100.0%	21.7%	64.5%
Military Connected	12	1.4%	0.9%	2.7%	12	1.4%	0.9%	2.7%
At-Risk	234	27.0%	19.3%	49.2%	234	26.7%	19.3%	49.1%
Students by Instructional Program:								
Bilingual/ESL Education	129	14.9%	4.7%	21.0%	129	14.7%	4.7%	20.9%
Gifted and Talented Education	39	4.5%	6.6%	8.3%	39	4.5%	6.6%	8.3%
Special Education	103	11.9%	11.4%	11.1%	111	12.7%	11.7%	11.3%
Students with Disabilities by Type of Primary Disability:								
Total Students with Disabilities	103							
By Type of Primary Disability								
Students with Intellectual Disabilities	15	14.6%	33.6%	42.5%				
Students with Physical Disabilities	65	63.1%	25.5%	21.3%				
Students with Autism	**	**	8.5%	14.1%				
Students with Behavioral Disabilities	14	13.6%	31.4%	20.6%				
Students with Non-Categorical Early Childhood	*	*	1.0%	1.5%				
Mobility (2019-20):								
Total Mobile Students	32	4.6%	5.1%	13.8%				
By Ethnicity:								
African American	1	0.1%	0.1%	2.8%				
Hispanic	9	1.3%	1.3%	7.1%				
White	17	2.4%	3.3%	3.1%				
American Indian	0	0.0%	0.0%	0.1%				
Asian	2	0.3%	0.1%	0.4%				
Pacific Islander	0	0.0%	0.0%	0.0%				
Two or More Races	3	0.4%	0.3%	0.4%				
Count and Percent of Special Ed Students who are Mobile	5	4.7%	7.3%	16.5%				
Count and Percent of EB Students/EL who are Mobile	5	5.0%	6.8%	13.6%				
Count and Percent of Econ Dis Students who are Mobile	13	9.2%	13.4%	16.0%				
Student Attrition (2019-20):								
Total Student Attrition	121	15.7%	10.0%	16.6%				

WQ
12767y

Debbie Zachary

From: PUBCOMMENT-OCC
Sent: Friday, August 19, 2022 4:43 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Comments and Request for Contested Case Hearing.pdf

H

From: psarahan@enochkever.com <psarahan@enochkever.com>
Sent: Friday, August 19, 2022 1:59 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Paul Sarahan

EMAIL: psarahan@enochkever.com

COMPANY: Enoch Kever PLLC

ADDRESS: 7600 N CAPITAL OF TEXAS HWY Building B, Suite 200
AUSTIN TX 78731-1184

PHONE: 5126151200

FAX:

COMMENTS: Attached please find comments on behalf of Shield Ranch.

ENOCH KEVER

Paul C. Sarahan
(512) 615-1215
psarahan@enochkever.com

August 19, 2022

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality,
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Comment and Request for Contested Case Hearing

Dear Chief Clerk Gharis:

I am submitting these initial comments and request for a contested case hearing on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938. The mission of the Shield Ranch is to restore the land through the practice of land stewardship; protect the land and its resources through advocacy and engagement in regional issues; facilitate research and education; offer a diverse array of educational programs and nature immersion experiences; and practice sustainable agriculture and provide healthy food to neighbors and local markets. The Shield Ranch is located directly adjacent to the Blizexas property that is the subject of the pending permit application referenced above. Blizexas has reflected the location of the Shield Ranch on pages 74-76 of its application. Given its location in relation to the property that is the subject of the pending permit application and the effect that Blizexas's operations will have on Shield Ranch's operations, Shield Ranch is an affected person in the pending matter.

Based on our preliminary review of the application and the proposed draft permit, Shield Ranch initially has several issues of concern. We continue to review the application and the proposed draft permit, and we reserve the right to supplement Shield Ranch's public comment. We understand that a public meeting is being scheduled in response to a request by Representative Erin Zwiener (Texas House of Representatives, District 45), and we look forward to attending that meeting. We understand it is the agency's practice to keep the public comment period open until the date of the public meeting. We have noted, however, that the Commissioners' Integrated Database reflects that the public comment period closes on August 19, 2022. In the interest of ensuring that Shield Ranch's interests are protected, we are submitting our initial comments within the 30-day window following Blizexas's July 20, 2022 publication of the Notice of Application and Preliminary Decision for Water Quality Land Application Permit for Municipal Wastewater (NAPD).

Shield Ranch's initial issues regarding Blizexas's application are as follows:

(1) In Administrative Report 1.0, Item 8.e. of the application, Blizexas checked "No" in response to the application's question - "Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?" The Commission's rules, 30 Tex. Admin. Code §§ 39.418, 39.419 39.405, and 39.426, require publication in an alternative language if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available. The Site is located within the attendance zone for the Dripping Springs Elementary School. Dripping Springs Elementary hosts the dual-language one-way bilingual program in Spanish for Dripping Springs Independent School District (*see* https://www.dsisdtx.us/domain/282). Blizexas has failed to publish either its Notice of Receipt of Application and Intent to Obtain Permit (NORI) or its NAPD in Spanish. Shield Ranch respectfully requests that the Executive Director require Blizexas to comply with 30 Tex. Admin. Code § 39.426 and re-publish its NAPD in Spanish, and re-start the public comment period upon the date of that re-publication.

(2) In Administrative Report 1.0, Item 9.d and 9.e. of the application, Shield Ranch has noted inconsistencies between the adjacent landowner list and the Hays County Appraisal District (HCAD) records such that it is possible that the correct adjacent landowners were not sent the NORI or the NAPD. These inconsistencies are also present in Worksheet 7, Attachment 1 (TLAP Application Attachment 30) of the application. Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its application and provide the required notices to the correct adjacent landowners who were not sent the NORI or the NAPD. Specifically, the Affected Landowners List with Table (TLAP Application Attachment 4) does not match the Hays County Appraisal District (HCAD) records with respect to the following properties, as designated on pages 74-76 of Blizexas' application :

a. Property 2 – This lot is listed in the application as being owned by 2W Austin Development, but it was transferred to Half-Ton LLC on May 24, 2021. The mailing address for Half-Ton LLC is 12730 Pauls Valley Road, Austin, TX 78737-9600.

b. Property 8 – This lot is listed in the application as being owned by 2W Austin Development, but it was transferred to JVH Industries LLC on June 5, 2021. The mailing address for JVH Industries LLC is 1200 Hardee Rd, Coral Gables, FL 33146.

c. Property 10 – This lot is listed in the application as being owned by SW 19. This lot contains 24 condominiums and, as shown on the attached summary for 15210 Fitzhugh Road, there are twelve separate owners.

(3) In Administrative Report 1.0, Item 11.f. of the application, Blizexas lists Barton Creek as the nearest watercourse to which rainfall run-off might flow if not contained. Barton Creek is Segment 1430 of the Texas Surface Water Quality Standards (SWQS). The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life. In addition, the report states that Barton Creek is a concern for near non-attainment (CN) of the SWQS for toxicity in sediment. The report states that the potential source for impairment is impervious surface/parking lot run-off and municipal (urbanized high density area), a condition that could be exacerbated by Blizexas's proposed site development project (*See* https://www.tceq.texas.gov/downloads/water-quality/assessment/integrated-report-2022/2022-sources.pdf).

(4) Shield Ranch notes that the TCEQ application format does not request information on federal and state listed threatened and endangered species. There are two federally listed endangered species, the golden-cheeked warbler (Dendroica chrysoparia) and the recently de-listed black-capped vireo (Vireo atricapilla), for which a Regional Habitat Conservation Plan was completed for Hays County developments in 2010 due to the potential for habitats of these species to be present throughout the County (https://hayscountytx.com/departments/development-services/hays-county-regional-habitatconservation-plan/). In addition to other potential impacts, the light and noise pollution that will be generated from Blizexas's proposed operations will negatively impact these species. It appears that potentially suitable habitat for the federally listed golden-cheeked warbler is present within the County; therefore, an Endangered Species Act (ESA) review and consultation should occur with the US Fish and Wildlife Services (USFWS) - Austin Ecological Services Field Office if potential habitats are identified within the proposed Facility boundaries.

(5) In Domestic Worksheet 3.3, Section 6, the application states that the proposed Facility is not located within the Edwards Aquifer Recharge or Transition Zones which is accurate. However, the proposed Facility is located within the Edwards Aquifer Contributing Zone. 30 Tex. Admin. Code § 213.21 states that regulated activities disturbing at least five acres are subject to the provisions of the 30 Tex. Admin. Code ch. 213, subch. B. Regulated activities include any construction or post-construction activity that has the potential to contribute pollution to surface water including buildings, aboveground storage tank systems, clearing, excavation or other activities which alter or disturb the topographic or existing storm water run-off characteristics *See* 30 Tex. Admin. Code § 213.22(6). Based on the Site Drawing provided in the TLAP Application Attachment 10, the proposed Facility will disturb more than five acres and the development of the site will include "regulated activities" under 30 Tex.

Admin. Code ch. 213, subch. B. Shield Ranch respectfully requests that the Executive Director require that Blizexas be prohibited from beginning the construction of the proposed Facility until it has filed an Edwards Aquifer Contributing Zone plan with the appropriate TCEQ regional office and the Executive Director has issued an approval letter for that contributing zone plan, pursuant to 30 Tex. Admin. Code § 231.23(a).

(6) Administrative Report 1.1 Buffer Zone Map (TLAP Application Attachment 8) of the application shows four of the subsurface area drip dispersal system (SADDS) units adjacent to the property boundaries. Shield Ranch has concerns about the appropriateness of the location of the dripfields. It appears from the Buffer Zone Map that four SADDS units are located less than 150 feet from the nearest property line. These are the SADDS labeled as 34,518 square feet (SF) and 28,548 SF in the northwest corner and 23,106 SF and 21,182 SF in the southern portion of the proposed Facility. The Commission's rule, 30 Tex. Admin. Code § 309.13(e) states wastewater treatment plant units may not be located closer than 150 feet to the nearest property line in order to qualify as a compliance requirement to abate and control a nuisance of odor. Blizexas only proposes as its method for abating and controlling odor nuisance the use of a buffer zone. Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its permit application to ensure that all of its SADDS units are located at least 150 feet from the nearest property line.

(7) Site Drawing (TLAP Application Attachment 10) of the application shows two ponds. These ponds are not mentioned in the application and are not shown on other drawings. Shield Ranch is concerned about the impact that Blizexas's proposed operations will have on these ponds. Shield Ranch respectfully requests that the Executive Director require Blizexas to demonstrate how it intends to ensure that pollution from Blizexas's operations do not impact these ponds, and amend its application to incorporate this demonstration.

(8) Recharge Feature Plan (Rev 1) (TLAP Application Attachment 24) of the application indicates that the property is located within the Edwards Aquifer Contributing Zone, and is subject to 30 Tex. Admin. Code ch. 213, subch. B. The site is located on the outcrop of the Upper Glen Rose Formation. Blizexas states it has researched the site and surrounding area for recharge features, such as caves, sinkholes, faults, or fractures but did not identify the presence of these features. Shield Ranch is concerned that without conducting a visit to the proposed Facility, we have been unable to confirm the presence or absence of recharge features that could impact the uppermost groundwater-bearing unit. Shield Ranch respectfully requests that the Commission conduct its own investigation of the site and determine the presence or absence of recharge features that could impact the uppermost groundwater-bearing unit.

(9) The Core Data form was signed by Erin Banks instead of a party with signatory authority. The Core Data form instructions (Section V, Item 46) state that "the signer must have signature authority..."A Delegation of Authority letter was not included in the application. In addition, the Core Data Form is missing the street address. (Administrative Report Item 3). Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its application to correct these deficiencies.

(10) Original Photographs (TLAP Application Attachment 6) of the application included photographs of the locations for only three of the six SADDS units. Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its application to provide photographs of the locations of the three SADDS units that have not yet been included in the photolog.

(11) The application includes additional errors that indicate that the application does not meet TCEQ's requirements. Shield Ranch respectfully requests that the Executive Director require Blizexas to amend its application to correct the following issues:

a. Administrative Report 1.0, Item 1. – The check number for the fee payment is missing from the form.

b. Administrative Report 1.0, Item 9.d and 9.e. The address for the owner is listed as 2470 Windchester Blvd, Ste D, Campbell, CA 95008. The address in other parts of the permit is listed as 258 Union Avenue, Los Gatos, CA 95032.

(12) Shield Ranch has concerns and questions regarding the potential impact of Blizexas's operations and the proposed land application of wastewater on Barton Creek and the waters running into Barton Creek. Because of the issues set forth in this letter, Shield Ranch asserts that the application does not meet TCEQ's requirements. Because the proposed draft permit is based on the accuracy and sufficiency of the application, Shield Ranch has questions about the sufficiency of the draft permit.

(13) Shield Ranch is also concerned about the adequacy of Blizexas's plans to ensure that stormwater from the site is diverted away from the proposed SADDS units. Shield Ranch has concerns about the ability and the adequacy of the plan to control rainfall run-off. The plan is mention on page 38 of the application, but there are no details and no engineering drawings provided. Shield Ranch has further concerns regarding the potential impact to the pond adjacent to two of the SADDS units, as discussed in Item 7 above.

(14) Shield Ranch has concerns and questions regarding the accurate quantification of the amount of wastewater that will be generated at the proposed site. Shield Ranch has questions on the proposed number, frequency, and size of the events to be held at the site; and the method of waste collection (standard bathroom plumbing vs. porta-potty,

e.g.). It appears that at least a reference to this type of information is contained within the application filed with TCEQ, but that this information has been redacted from the version of the application that has been made available to the public. Without such information, Shield Ranch cannot verify the accuracy of the calculation or the determination of:

a. The design flow;
b. The peak 2-hour flow;
c. The sufficiency and the performance of the proposed capacity of the flow equalization system, including, for example, the flow equalization tank, the aeration basin the aerobic digester, the clarifier, and the chlorine contact chamber;
d. The adequacy of the irrigation area;
e. The adequacy of the tank storage capacity;
f. The adequacy of the annual cropping plan;
g. The adequacy of the groundwater monitoring plan;
h. The adequacy of the soil's water capacity; and
i. The adequacy of the infiltration rate, the nitrogen application rate and other dosing information.

(15) Shield Ranch has concerns as to whether the effluent will remain within the effluent disposal site boundaries, particularly given how close four of the SADDS units are to property boundaries. The application provides insufficient data to determine the radius of influence and how far the applied wastewater will disburse. The soil type and conditions at the site are particularly relevant to these determinations.

(16) Shield Ranch has concerns about the facility's inadequate plans to abate and control nuisance odors. As noted above, the buffer is insufficient, and Shield Ranch will be negatively impacted by Blizexas's operations.

(17) Blizexas has a contractual agreement with Wastewater Residuals Management for offsite disposal of wastes generated from the site that cannot be managed onsite. Wastewater Residuals Management has applied for a major permit amendment to increase its daily maximum capacity. Shield Ranch has concerns as to whether Wastewater Residuals Management currently has sufficient capacity to handle offsite disposal of wastes generated from the Blizexas site that cannot be managed onsite if its major permit amendment is not granted prior to Blizexas's proposed waste disposal start date of June 2023.

(18) Shield Ranch has concerns about the adequacy of the sewage sludge solids management plan, the Recharge Feature Plan, the Soil Evaluation, the Site Preparation Plan, and the Soil Sampling and Testing.

(19) The application indicates that there are no plans to water the grasses proposed to be used at the site as part of the application. *See* Annual Cropping Plan, TLAP Application Attachment 17. The effects of drought conditions raise the question of the ability of the grass to be maintained as proposed absent such watering. The lack of any plan to use water to maintain the grass creates a fire hazard in dry summer months, which creates a hazard for neighboring properties, including the Shield Ranch.

(20) There is inconsistency in the application where Blizexas indicates that fertilizers will not be needed and that they would be required. *See* soil analysis reports, pp. 260-264.

(21) Shield Ranch has concerns regarding the availability of sufficient quantities of water to keep down nuisance dust emissions. The application includes no information from which to draw conclusion on the capacity of the well and the extent of uses to which Blizexas will put water drawn from its on-site well.

(22) Correspondingly, Shield Ranch has concerns regarding the diversion of water for the purposes of keeping down dust emissions from higher uses of the water.

(23) For all of the reasons set forth above, the proposed site represents an incompatible land use in relation to neighboring properties.

(24) Shield Ranch has concerns about traffic, light and noise that will be caused by the proposed site.

(25) Shield Ranch has concerns about emergency response plans that will be required to respond to proposed events at the site, as well as to potential fire hazards as a result of the failure to use water to maintain grass in dry summer months.

(26) Road expansions and adequate ingress and egress routes will be required to maintain the safety of those utilizing the site, as well as the site's neighbors.

Shield Ranch respectfully submits these initial comments and requests that the Executive Director require Blizexas to amend its application and, as necessary, re-publish any required notices. Upon that amendment, Shield Ranch respectfully requests that the Executive Director determine whether Blizexas's application meets all applicable requirements and, if so, review the proposed draft permit and determine what changes are required in the proposed draft permit based on the amended application.

Based on its initial review of Blizexas's application, Shield Ranch has identified significant issues concerning whether the application meets all applicable requirements. As a result, Shield Ranch respectfully requests that a contested case hearing be held in this matter so that Shield Ranch may have the opportunity to fully litigate each of the issues raised here such that the State Office

of Administration and, ultimately, the Commission may appropriately determine whether Blizexas's application and the draft permit meet all applicable requirements.

Sincerely,

Paul C. Sarahan

PCS: po

Enclosure: Hays County Appraisal District Property Search, dated August 9, 2022

Hays CAD Property Search

Page 1 of 1 - Total: 24 (0.068 seconds)

Quick Ref ID	Nbrhd. Code	Type	Owner Name	Address	Appraised
R168969	C-FITZHUGH	Real	FITZHUGH BUSINESS CENTER LTD	15210 FITZHUGH RD, UNIT #3, AUSTIN, TX 78736	$27,290
R168975	C-FITZHUGH	Real	FITZHUGH BUSINESS CENTER LTD	15210 FITZHUGH RD, UNIT #9, AUSTIN, TX 78736	$58,660
R168989	C-FITZHUGH	Real	FITZHUGH BUSINESS CENTER LTD	15210 FITZHUGH RD, UNIT #23, AUSTIN, TX 78736	$2,480
R168990	C-FITZHUGH	Real	FITZHUGH BUSINESS CENTER LTD	15210 FITZHUGH RD, UNIT #24, AUSTIN, TX 78736	$128,990
R168983	C-FITZHUGH	Real	LINDS & DYLAN LLC SERIES FITZHUGH	15210 FITZHUGH RD, UNIT #17, AUSTIN, TX 78736	$401,190
R168984	C-FITZHUGH	Real	LINDS & DYLAN LLC SERIES FITZHUGH	15210 FITZHUGH RD, UNIT #18, AUSTIN, TX 78736	$509,720
R168974	C-FITZHUGH	Real	FITZHUGH TOWN CENTER LOT 8C LLC	15210 FITZHUGH RD, UNIT #8, AUSTIN, TX 78736	$74,420
R168985	C-FITZHUGH	Real	LINDS & DYLAN LLC- SERIES FITZHUGH TRES	15210 FITZHUGH RD, UNIT #19, AUSTIN, TX 78736	$74,420
R168967	C-FITZHUGH	Real	BUCKHORN HOLDINGS LLC	15210 FITZHUGH RD, UNIT #1, AUSTIN, TX 78736	$74,420
R168968	C-FITZHUGH	Real	BUCKHORN HOLDINGS LLC	15210 FITZHUGH RD, UNIT #2, AUSTIN, TX 78736	$62,180
R168970	C-FITZHUGH	Real	BUCKHORN HOLDINGS LLC	15210 FITZHUGH RD, UNIT #4, AUSTIN, TX 78736	$93,350
R168971	C-FITZHUGH	Real	HAYS CONSTRUCTION SERVICES LLC	15210 FITZHUGH RD, UNIT #5, AUSTIN, TX 78736	$74,420
R168972	C-FITZHUGH	Real	WOODSIDE PROPERTIES LLC	15210 FITZHUGH RD, UNIT #6, AUSTIN, TX 78736	$74,420
R168973	C-FITZHUGH	Real	MESQUITE COMMERCIAL DEVELOPMENT LLC	15210 FITZHUGH RD, UNIT #7, AUSTIN, TX 78736	$140,420
R168976	C-FITZHUGH	Real	MESQUITE COMMERCIAL DEVELOPMENT LLC	15210 FITZHUGH RD, UNIT #10, AUSTIN, TX 78736	$39,530
R168977	C-FITZHUGH	Real	RKC PARTNERSHIP ONE LLC	15210 FITZHUGH RD, UNIT #11, AUSTIN, TX 78736	$216,880
R168978	C-FITZHUGH	Real	SW 19 LLC	15210 FITZHUGH RD, UNIT #12, AUSTIN, TX 78736	$164,650
R168979	C-FITZHUGH	Real	HAYS CONSTRUCTION SERVICES LLC	15210 FITZHUGH RD, UNIT #13, AUSTIN, TX 78736	$74,420
R168980	C-FITZHUGH	Real	HAYS CONSTRUCTION SERVICES LLC	15210 FITZHUGH RD, UNIT #14, AUSTIN, TX 78736	$74,420
R168981	C-FITZHUGH	Real	RKC PARTNERSHIP ONE LLC	15210 FITZHUGH RD, UNIT #15, AUSTIN, TX 78736	$74,420
R168982	C-FITZHUGH	Real	RKC PARTNERSHIP ONE LLC	15210 FITZHUGH RD, UNIT #16, AUSTIN, TX 78736	$74,420
R168986	C-FITZHUGH	Real	SW 19 LLC	15210 FITZHUGH RD, UNIT #20, AUSTIN, TX 78736	$523,950
R168987	C-FITZHUGH	Real	MESQUITE COMMERCIAL DEVELOPMENT LLC	15210 FITZHUGH RD, UNIT #21, AUSTIN, TX 78736	$511,580
R168988	C-FITZHUGH	Real	SW 19 LLC	15210 FITZHUGH RD, UNIT #22, AUSTIN, TX 78736	$510,650

1 - 24 of 24 Items

TCEQ Registration Form

#1

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Paul Sarahan

Mailing Address: 6801 Tester Wild Dr.

Physical Address (if different): _____

City/State: Austin **Zip:** 78750

This information is subject to public disclosure under the Texas Public Information Act

Email: Paul.Sarahan@earthandwatergroup.com

Phone Number: (512) 971-4156

- Are you here today representing a municipality, legislator, agency, or group? ☑ Yes ☐ No

  If yes, which one? Shield Ranch

☐ **Please add me to the mailing list.**

☑ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

1/29/24

Office of Chief Clerk

Re: Blizexas TLAP application

Please include a prohibition on land application if a significant rain is predicted to occur in the next three days. In determining quantity of what constitutes "significant" rain, require calculations of amount that can be handled within a drip field without an overflow. Applicant should be required to prepare and justify this calculation

Paul C. Sarahan
Counsel for Shield Ranch

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

Misty Botello

From: PUBCOMMENT-OCC
Sent: Friday, September 8, 2023 3:00 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: paul.sarahan@earthandwatergroup.com <paul.sarahan@earthandwatergroup.com>
Sent: Friday, September 8, 2023 2:51 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Paul C. Sarahan

EMAIL: paul.sarahan@earthandwatergroup.com

COMPANY: Earth & Water Law, LLC

ADDRESS: 6801 JESTER WILD DR
AUSTIN TX 78750-8173

PHONE: 5129714156

FAX:

COMMENTS: See attached comments on behalf of Shield Ranch.

Ellie Guerra

From: PUBCOMMENT-OCC
Sent: Friday, March 24, 2023 10:22 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Additional Comment on Required Republication1.pdf

From: psarahan@enochkever.com <psarahan@enochkever.com>
Sent: Thursday, March 23, 2023 12:04 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Paul Sarahan

EMAIL: psarahan@enochkever.com

COMPANY: Enoch Kever PLLC

ADDRESS: 7600 N CAPITAL OF TEXAS HWY Building B, Suite 200
AUSTIN TX 78731-1184

PHONE: 5126151200

FAX:

COMMENTS: Attached please find additional comment on the requirement for Blizexas to publish notice in Spanish.

ENOCH KEVER

Paul C. Sarahan
(512) 615-1215
psarahan@enochkever.com

March 23, 2023

Filed Electronically at: www.tceq.texas.gov/goto/comment

Office of the Chief Clerk
Texas Commission on Environmental Quality,
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Additional Comment on Required Republication

Dear Chief Clerk Gharis:

I am submitting this additional comment, with information supplementing prior comments submitted on behalf of our client, Shield Ranch, a 6,800-acre family ranch established in 1938.

Shield Ranch noted in its initial comment that, in Administrative Report 1.0, Item 8.e. of the application, Blizexas checked "No" in response to the application's question - "Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?" The Commission's rules, 30 Tex. Admin. Code §§ 39.418, 39.419 39.405, and 39.426, require publication in an alternative language if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available. The Site is located within the attendance zone for the Dripping Springs Elementary School. Dripping Springs Elementary hosts the dual-language one-way bilingual program in Spanish for Dripping Springs Independent School District (*see* https://www.dsisdtx.us/domain/282). Blizexas has failed to publish either its Notice of Receipt of Application and Intent to Obtain Permit (NORI) or its NAPD in Spanish.

Shield Ranch understands that the Executive Director issued a Notice of Deficiency (NOD) regarding several elements of Blizexas's application, and that one of the issues addressed the bilingual notice requirement. A copy of the NOD is attached hereto, as Attachment 1. Shield Ranch also understands that Blizexas responded to the NOD, and specifically to the bilingual notice requirement, with a revision to its application. A copy of Blizexas's response to the NOD is attached hereto as Attachment 2.

Blizexas acknowledged that its prior statement in the application regarding the bilingual notice requirement was false. Blizexas provided a "revised Item E.1 of the Administrative

Application with regard to bilingual public notice and the revised Alternative Language Form for the NORI." On page 7 of the revised Item E, Blizexas admitted that there was a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the proposed facility, and that the students who attend either the elementary school or the middle school are enrolled in a bilingual education program at that school.

However, Blizexas, via its Representative, Erin Banks, certified that it had "conducted a diligent search for a newspaper or publication of general circulation in both the municipality and county in which the facility is located or proposed to be located and was unable to publish the notice in the required alternative language because: A newspaper or publication could not be found in any of the alternative languages in which notice is required."

This certification is also false. Shield Ranch's Supplemental Comments included the following: "Although it is not Shield Ranch's obligation to provide additional information to assist Blizexas in complying with its publication requirements, it is Shield Ranch's understanding that the *El Mundo* newspaper serves Austin, San Antonio and surrounding areas, and delivers weekly to locations within Hays County."

TCEQ's rules mandate Blizexas's publication of notice in Spanish. Under 30 Tex. Admin. Code § 39.426(b):

(1) The notice required by § 39.418[1] or § 39.419[2] of this title must be published in a newspaper or publication that is published primarily in the alternative languages in which the bilingual education program is or would have been taught, and the notice must be in those languages.

(2) The newspaper or publication must be of general circulation in the county in which the facility is located or proposed to be located. If the facility is located or proposed to be located in a municipality, and there exists a newspaper or publication of general circulation in the municipality, the applicant shall publish notice only in the newspaper or publication in the municipality. This paragraph does not apply to notice required to be published for air quality permits under § 39.603 of this title (relating to Newspaper Notice).

---

[1] 30 Tex. Admin. Code § 39.418(b) – "Not later than 30 days after the executive director declares an application administratively complete: (1) the applicant, other than applicants for air quality permits, shall publish Notice of Receipt of Application and Intent to Obtain Permit once under § 39.405(f)(1) of this title (relating to General Notice Provisions) and, for solid waste applications and injection well applications, also under § 39.405(f)(2) of this title. The applicant shall also publish the notice under §39.426 of this title (relating to Alternative Language Requirements), if applicable."

[2] 30 Tex. Admin. Code § 39.419(b) – "The applicant shall publish Notice of Application and Preliminary Decision at least once in the same newspaper as the Notice of Receipt of Application and Intent to Obtain Permit, unless there are different requirements in this section or a specific subchapter in this chapter for a particular type of permit. The applicant shall also publish the notice under § 39.426 of this title (relating to Alternative Language Requirements), if applicable.

Blizexas has admitted, finally, it is required to publish its public notices in Spanish, but has claimed an exemption from that requirement by asserting that a newspaper or publication could not be found in Spanish. Under 30 Tex. Admin. Code § 39.426(b)(2), the newspaper or publication must be of general circulation in the ***county***[3] in which the facility is located or proposed to be located." (Emphasis added).

As Shield Ranch previously noted, *El Mundo* is a Spanish newspaper that is of general circulation in Hays County. Its 2022 Media Kit, a copy of which is attached hereto as Attachment 3, demonstrates that *El Mundo* has a circulation of over 1000 in Hays County,[4] and is published every Thursday, except Thanksgiving and the first week of the year.[5] The 2022 Media Kit constitutes admissible evidence under Tex. R. Evid. 803(17) as a market quotation, list, directory, or other compilation that is generally relied on by the public or by persons in particular occupations. Under Tex. R. Evid. 803, no affidavit or testimony is required for admission of the 2022 Media Kit. As admissible evidence, the Executive Director can confidently rely on this document to demonstrate that in fact there is a Spanish newspaper of general circulation in Hays County, contrary to Blizexas's certification.

Blizexas's failure to comply with the alternative language requirements, which it now admits are applicable here, may not be allowed to continue. Before Blizexas's application may further be considered by the Executive Director, Blizexas must be required to comply with 30 Tex. Admin. Code § 39.426 and re-publish the required notices in Spanish in *El Mundo*, and re-start the public comment period upon the date of that re-publication. Shield Ranch respectfully requests that the Executive Director require Blizexas to take this required action.

Sincerely,

Paul C. Sarahan

cc: Harrison Malley, Environmental Law Division, TCEQ

PCS/ewm

Attachments

---

[3] The publication requirements subject to a facility located within a municipality are not applicable here, as Blizexas's proposed facility is not located within a municipality.

[4] *El Mundo 2022 Media Kit*, at p. 4 (Circulation of 500 in Buda; 550 in San Marcos; and 500 in the Hutto-Kyle area, with Kyle being located in Hays County).

[5] *Id.*, at p. 3.

Attachment 1

ROCKINGWALL RANCH WWTF
PERMIT NO. WQ0016111001
APPLICATION FOR A NEW PERMIT

Please address the following technical deficiencies identified at the public meeting held on November 29, 2022

ADMINISTRATIVE, FLOW JUSTIFICATION, AND TREATMENT UNIT

1. Page 7, item E.1 of the Bilingual Notice Requirements section of Administrative Report 1.0 identfies that there is no bilingual education program at the school nearest to the proposed facility. However, this comment was raised at the public meeting and it appears that this response is incorrect after the Environmental Law Division received confirmation from the engineer who prepared the application. Please submit revised permit application pages to correct this statement and complete the other required items 1-5 in that section, including the public notice verification form.

2. Domestic Technical Report 1.1, Section 1A: Justification of permit need. The Executive Director's staff received a significant number of comments and concerns about the proposed flow of 12,000 gallon per day. After reviewing these comments and the specific site characteristics of the facility, Executive Director's staff have similar concerns that the proposed flow was underestimated for this size of facility. Please provide more specific information about how you estimated the proposed flow for the facility. Revise Section 1A to provide justification for the proposed flows. Provide information such as the size of the development, the date construction on the development is scheduled to begin, the anticipated growth rate of the development, and what flow per unit/person was used to develop the proposed permitted flow. If additional space is needed, submit the justification information as an attachment.

   Estimate the design flow using 30 TAC Chapter 217.32(a)(3)(Table B.1). Otherwise provide the sources for your basis for this estimate. In addition, provide information whether the population growth will allow for the facility to be constructed and operated in the next 5 or 10 years.

3. Domestic Technical Report 1.0, Section 2B: Treatment Units. It appears that the treatment system includes a flow equalization basin (FEB). Please provide more details about the FEB such as sketch, location, buffer zone boundaries, type of material, (i.e., steel tank, fiber glass tank or earthen basin), specifications, and design parameters. Explain how the basin will handle the high variability of wastewater generation during peak hours.

GEOLOGY

The following items were identified by Water Quality Assessment staff during a site visit held with the applicant and its representative prior to the public meeting held November 29, 2022. If any of these items necessitate moving the subsurface area drip dispersal system (SADDS) fields from the locations indicated on the Site Map or modifying acreage, then the applicant must update the permit application, attachments, and required plans in all relevant portions to reflect those changes.

1. The following two items were identified at the site visit that were incorrectly identified as not being present in the submitted Recharge Feature Plan (RFP) and in response to an earlier notice of deficiencies. Please submit a revised RFP to correct inaccuracies and address these features. This RFP must be certified by a Texas licensed professional

engineer or geoscientist. Additionally, the applicant will need to submit revised maps identifying these features and any required setbacks between them and the SADDS fields (e.g. permit application Attachments 8, 10, 21, 22).

a. A roadside ditch is present on the south side of Fitzhugh Rd. This roadside ditch is considered to be a water in the state and per §222.81(a)(3), a minimum buffer of 100 feet is required to be maintained between this feature and the SADDS.

b. A stock tank is present immediately to the west of one of the SADDS fields. This feature is identified as a water feature on the USGS topographic map. The revised RFP must include a proposed best management practice to mitigate any potential impact to surface and groundwater quality from this feature. This feature is considered to be a water in the state. It was communicated to TCEQ during the site visit that the applicant proposes to fill in this feature to grade during construction. Please verify if the feature will be filled in or ensure that there is a minimum setback of 100-feet between this feature and the SADDS field.

2. During the site visit, a probable abandoned hand-dug water well and secondary feature that may or may not be an abandoned water well were identified adjacent to a cistern on the property. The permit application and RFP identified that there are no water wells onsite. Please provide more information about these features in the RFP. If they are wells, please also submit the revised Well Map and Well Table (attachments 18 and 19) required by Domestic Worksheet 3.0 item 6 identifying these features and proposed BMPs.

3. During the site visit it was observed that the topography of the two northern SADDS fields is more steeply sloping towards the north than it appeared from the USGS topographic map. These fields appear to be proposed immediately adjacent to the property boundary. Please setback the fields a minimum distance of 25 feet from the property boundary, or other spacing in accordance with 16 TAC Chapter 76, so that lysimeters can be installed in that buffered area to ensure that no offsite migration of wastewater will occur.

AGRONOMY

1. If the application fields are moved due to a response from any other noted deficiencies, please submit an updated/revised USDA Soil Survey map 9 (Domestic Worksheet 3.0 - Section 8), soil analyses (Domestic Worksheet 3.0 - Section 8), soil evaluation (Domestic Worksheet 3.3 - Section 3), and soil sampling (Domestic Worksheet 3.3 - Section 3). A signed statement may be submitted in lieu of an updated report if the previously submitted information is representative of the new fields.

2. If there are any updates to the flow and subsequently the size of the application fields, please submit the information stated in above deficiency (Agronomy #1) as well as updated Domestic Worksheet 3.0, Section 2 and Domestic Worksheet 3.3, Section 2.

For overall permit related questions, please contact Deba Dutta, P.E at (512) 239-4608 or via email at Deba.Dutta@tceq.texas.gov (preferred). For geology-related questions, please contact April Hoh, P.G. at (512) 239-2567 or via email at April.Hoh@tceq.texas.gov (preferred). For soils/agronomy-related questions, please contact Alan Barraza at (512) 239-1539 or via email at Alan.Barraza@tceq.texas.gov (preferred).

Attachment 2

wwdengineering
F-12009
9217 Hwy. 290 West, Suite 110, Austin, Texas, 78736 • 512.288.2111 • F: 512.610.6950 • www.wwdengineering.net

January 23, 2023

Deba Dutta, PE
Applications Review and Processing Team (MC 148)
Texas Commission on Environmental Quality
12101 Park Circle Dr.
Austin, TX 78753

RE: Response to Letter Post Public Meeting
TLAP Permit No. WQ0016111001

Mr. Dutta,
In response to your letter post the public meeting held on November 29, 2022, for the Rockingwall Development, we are providing the following information and attachments:

ADMINISTRATIVE, FLOW JUSTIFICATION AND TREATMENT UNIT

1. Please find attached the revised Item E.1 of the Administrative Application with regard to bilingual public notice and the revised Alternative Language Form for the NORI.
2. Please find attached the justification for the permit and how the flows were calculated, based upon empirical data from another, similar facility.
3. The Flow Equalization Basin (FEB) information is described below and the sizing was included in the original application,
   Flow Equalization (1) - 8'-2"ft D x 8ft W x 40ft L
   Constructed of Coated Carbon Steel
   FEB Process:
   The FEB will be sized to function both as a holding basin for all incoming flows and the source for controllable steady state forwarding to the process system. Thus, it will be oversized beyond our typical standard of 8 hours retention for normal steady state processing. This is due to the nature of the waste stream production for this event center, which is only expected to be open for use between one and three days/week, and sometimes not in use for an entire week, perhaps. Since the estimate provided for sizing of a collection and treatment system was both a "daily average" of 12,000 gallons and a peak of 35,000 gallons, this will equalize the surge3s in flow over days or a week in the 40,000 gallon basin. The basin will adhere to the 150' buffer that all treatment components are adhering to at the site.

GEOLOGY

1. Please find attached revised Recharge Feature Plan and Attachments 8, 10, 21, and 22.
2. We were unable to find any data on any possible hand dug or otherwise constructed wells at the site based upon our database searches. One existing well, not found in the databases, had been previously plugged, but we have no other information on this well, other than the plugging report. The owner, prior to constructing SADDS fields or the WWTP will have any possible recharge features encountered or addressed. The owner will have a licensed well driller properly plug these "well type" features in accordance with State law prior to construction. The updated RFP addresses these possible features, however, since we could not confirm any additional information on the possible feature, we were not able to update the well report, just the well list and map, as well as including the plugging report.
3. We have added a 25' property line setback for the two northernmost SADDS fields, this is reflected in the revised attachments.

AGRONOMY

1. As a result of the setbacks for the bar ditch and the 25' property line setback, some of the SADDS fields were removed from the permit application and relocated adjacent to SADDS fields included in the original permit application. These fields are adjacent to the original field locations and of the same soils types that had previously been evaluated and tested. The existing soil reports and analysis are representative of the new areas. The updated SADDS areas are shown on the attached exhibits.
2. There are no updates to the flow, the size of the dripfields remained the same, locations are just slightly adjusted.

If you have any questions or comments regarding this please contact me at [redacted]

Sincerely,
WWD Engineering

Erin K Banks

Erin Banks, P.E.
President

Attachments 1/23/23

First and Last Name: Bill LeClerc

Credential (P.E, P.G., Ph.D., etc.):

Title: Director

Organization Name: Blizexas, LLC

Mailing Address: 2470 South Winchester Boulevard, Suite D

City, State, Zip Code: Campbell, CA 95008

Phone No.: 978-877-1798 Ext.: Fax No.:

E-mail Address: wleclerc@lexorbuilders.com

D. Public Viewing Information

If the facility or outfall is located in more than one county, a public viewing place for each county must be provided.

Public building name: Dripping Springs Community Library

Location within the building: Front Desk

Physical Address of Building: 501 Sportsplex Drive

City: Dripping Springs County: Hays

Contact Name: Librarian

Phone No.: 512-858-7825 Ext.:

E. Bilingual Notice Requirements:

This information **is required** for **new, major amendment, and renewal applications.** It is not required for minor amendment or minor modification applications.

This section of the application is only used to determine if alternative language notices will be needed. Complete instructions on publishing the alternative language notices will be in your public notice package.

Please call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine whether an alternative language notices are required.

1. Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?

   ☒ Yes ☐ No

   If **no**, publication of an alternative language notice is not required; **skip to** Section 9 below.

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

   ☒ Yes ☐ No

3. Do the students at these schools attend a bilingual education program at another location?

   ☐ Yes ☒ No

4. Would the school be required to provide a bilingual education program but the school has waived out of this requirement under 19 TAC §89.1205(g)?

   ☐ Yes ☒ No

5. If the answer is yes to question 1, 2, 3, or 4, public notices in an alternative language are required. Which language is required by the bilingual program? Spanish

Section 9. Regulated Entity and Permitted Site Information (Instructions Page 33)

A. If the site is currently regulated by TCEQ, provide the Regulated Entity Number (RN) issued to this site. **RN**

Search the TCEQ's Central Registry at http://www15.tceq.texas.gov/crpub/ to determine if the site is currently regulated by TCEQ.

B. Name of project or site (the name known by the community where located):

Rockingwall

C. Owner of treatment facility: Blizexas, LLC

Ownership of Facility: ☐ Public ☒ Private ☐ Both ☐ Federal

D. Owner of land where treatment facility is or will be:

Prefix (Mr., Ms., Miss):

First and Last Name: Blizexas, LLC

Mailing Address: 2470 S Windchester Blvd, Ste D

City, State, Zip Code: Campbell, CA 95008

Phone No.: 978-877-1798 E-mail Address: wleclerc@lexorbuilders.com

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment:

E. Owner of effluent disposal site:

Prefix (Mr., Ms., Miss): Blizexas, LLC

First and Last Name:

Mailing Address: 2470 S Windchester Blvd, Ste D

City, State, Zip Code: Campbell, CA 95008

Phone No.: 978-877-1798 E-mail Address: wleclerc@lexorbuilders.com

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Public Notice Verification Form
Notice of Receipt of Application and Intent to Obtain Permit (NORI)
Water Quality Permit

Complete this page only if you are required to publish in an alternative language and are not able to do so.

Applicant Name: Blizexas, LLC

Site or Facility Name: Rockingwall WWTP

Water Quality Permit Number: WQ0016111001

Regulated Entity Number: RN 111436440 Customer Number: CN 605898865

ALTERNATIVE LANGUAGE EXEMPTION

I certify that I have conducted a diligent search for a newspaper or publication of general circulation in both the municipality and county in which the facility is located or proposed to be located and was unable to publish the notice in the required alternative language because:

☒ A newspaper or publication could not be found in any of the alternative languages in which notice is required.

☐ The publishers of the newspapers listed below refused to publish the notice as requested, and another newspaper or publication in the same language and of general circulation could not be found in the municipality or county in which the facility is located or proposed to be located.

Newspaper Name:

Language:

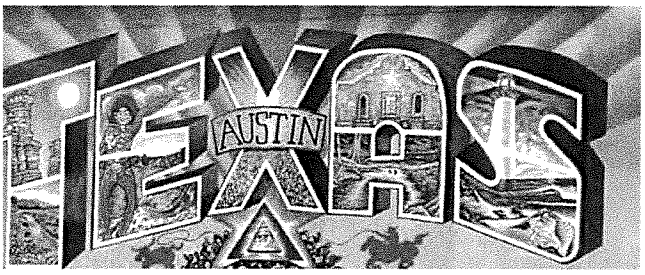
Applicant or Applicant Representative Signature: Erin K Banks

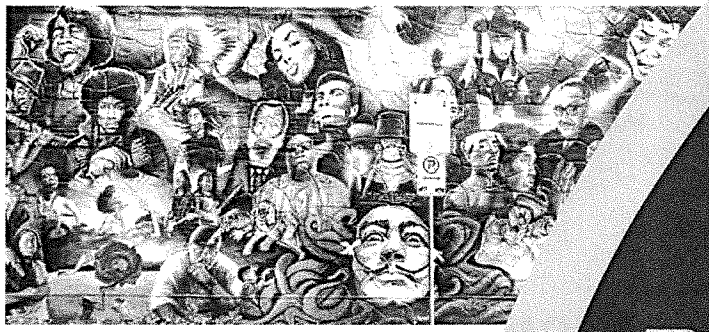
Title: President, WWD Engineering Date: 1/16/23

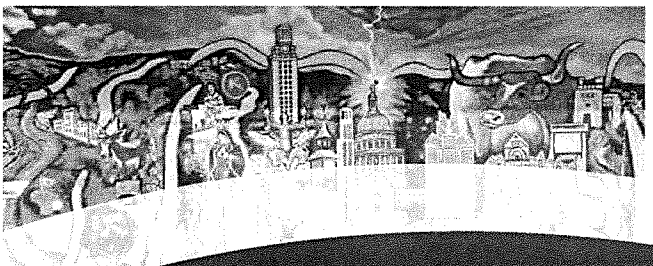
Attachment 3

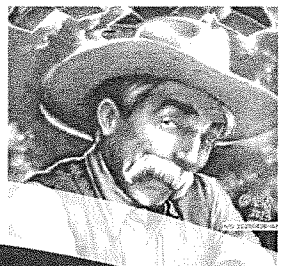
2022 • MEDIA KIT

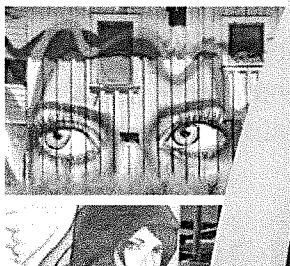
El Mundo









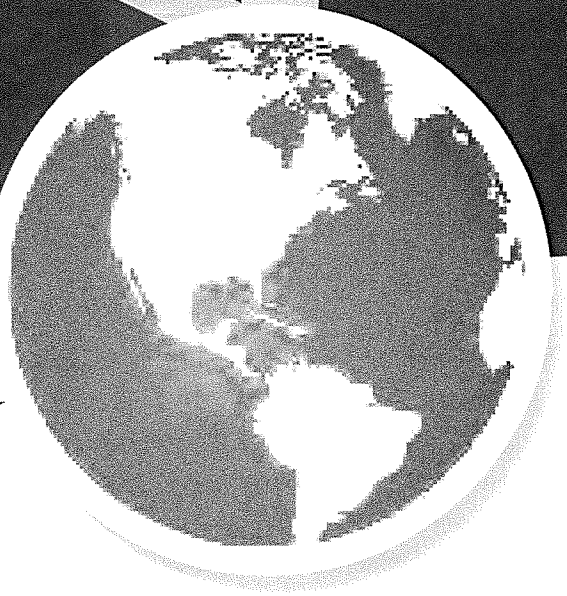


33 YEARS
Serving The Hispanic Community Since 1989

The beginning of your success with the

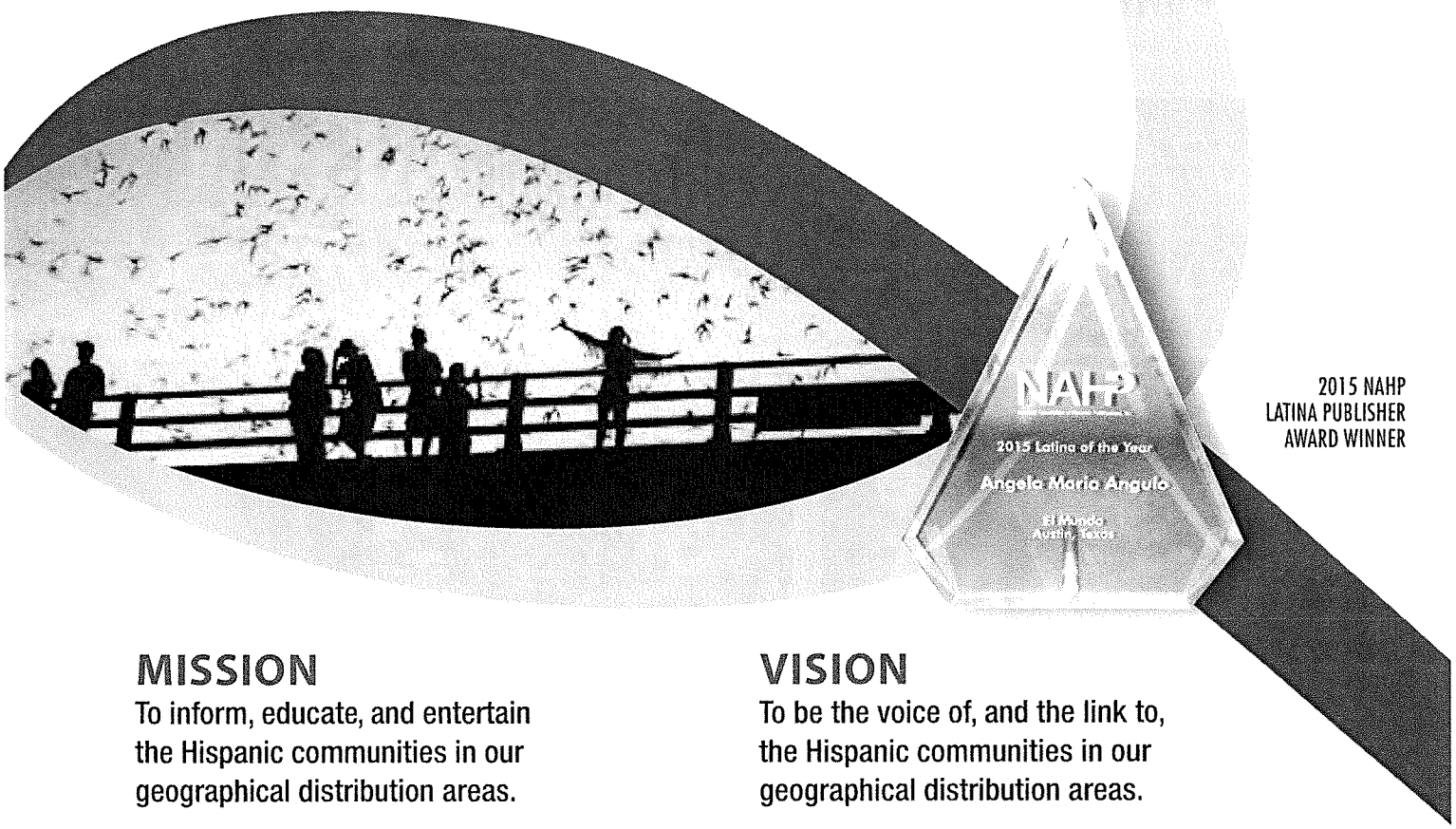
hispanic community

www.elmundonewspaper.com



The Leading Weekly Spanish Newspaper for Central Texas

2519 E 5th Street • Austin, TX 78702
(512) 476-8636 • Fax: (512) 476-6402



2015 NAHP
LATINA PUBLISHER
AWARD WINNER

MISSION

To inform, educate, and entertain the Hispanic communities in our geographical distribution areas.

VISION

To be the voice of, and the link to, the Hispanic communities in our geographical distribution areas.

1989-2022

- El Mundo Newspaper is Austin's largest and oldest Spanish language newspaper.
- El Mundo Newspaper is a rich source of local, regional, and international news on topics including entertainment, sports, and community activities and resources.
- Due to the success of our products and our understanding of the Hispanic market, we pride ourselves in being the voice of the Hispanic community of Central Texas.
- El Mundo Newspaper knows the market because we are the market. Our staff of professionals are from more than 6 different Spanish-speaking countries. Although we all have different tastes in food, music, and even words, we all share a passion for serving the Hispanic community... our community!
- We offer our clients not only our newspaper, but also a thorough understanding of the Central Texas Hispanic consumer to help them make the appropriate marketing decisions.

Integrity

- We are an honest, accountable and highly responsible trustee of the Hispanic community's communication needs.

Attitudes

- We reflect a CAN DO spirit. We are goal and results-oriented. We direct our time and attention toward critical mission and vision directed activities. We strive to keep actions simple, understandable, and easy to implement. We are committed to do whatever it takes to get the job done.

Excellence

- We are committed to business excellence and utilization of Total Quality Management techniques of focus on customer satisfaction supported by continuous improvements in everything we do. We strive to 'do the right things right, the first time'.

Business Objective

- To develop and grow a profitable communications business by achieving our Mission and Vision with consistent performance.

MOST POPULAR SIZES

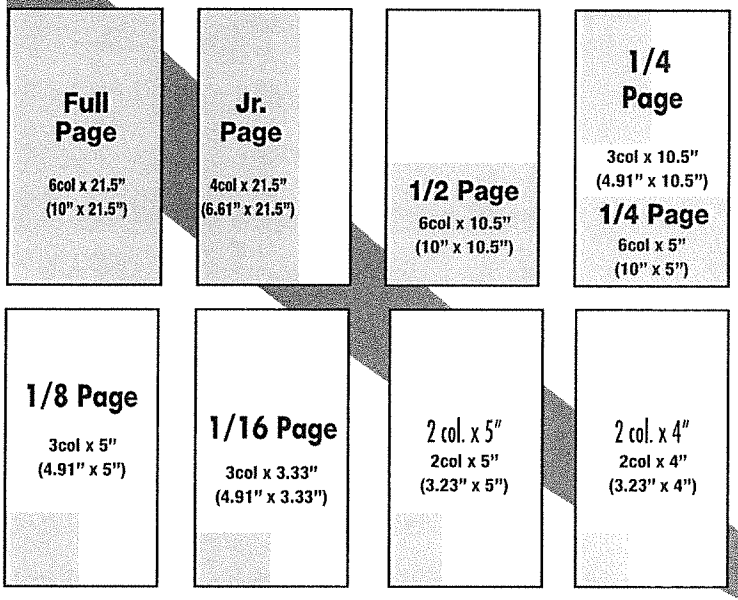
SIZE	RATES	
2X4"	$184	BW
	$200	FC
2X5"	$230	BW
	$250	FC
1/8 3 COL X 5"	$345	BW
	$375	FC
1/4 3 COL X 10.5"	$725	BW
	$788	FC
Jr. Page 4 COL X 21.5"	$1,978	BW
	$2,150	FC
1/2 6 COL X 10.5"	$1,449	BW
	$1,575	FC
1 Page 6 COL X 21.5"	$2,967	BW
	$3,225	FC

COLUMN INCH RATES

BLACK & WHITE	$23
FULL COLOR	$25

FIXED POSITION 15% EXTRA

DIMENSIONS



DIGITAL ARTWORK

- When providing digital artwork, ads must be submitted in Macintosh format with images at a resolution of 200 DPI.
- Ads must be accompanied by any and all artwork files and fonts used to create the ad if not providing a flattened, press-ready PDF.
- **Color Ads:** Must be CMYK. A color proof is required.
- **Email:** Please archive files as .Zip or .Sit before sending via email.

INSERTS (FSI)

- **El Mundo Newspaper** accepts free standing inserts. The minimum accepted is 15,000.

	COST PER IK
Single Sheet	$55
4-8 Page Tab	$65
12-16 Page Tab	$70
20-28 Page Tab or Flexi	$75

MECHANICAL SPECIFICATIONS

Page size: Broadsheet (129 CI)
Dimensions: 6 Columns x 21.5" (SAU 129)
Screen: 65 line screen

DISPLAY ADS BY COLUMN WIDTH

1Column 1.54"	2Columns 3.23"	3Columns 4.91"
4Columns 6.63"	5Columns 8.31"	6Columns 10"

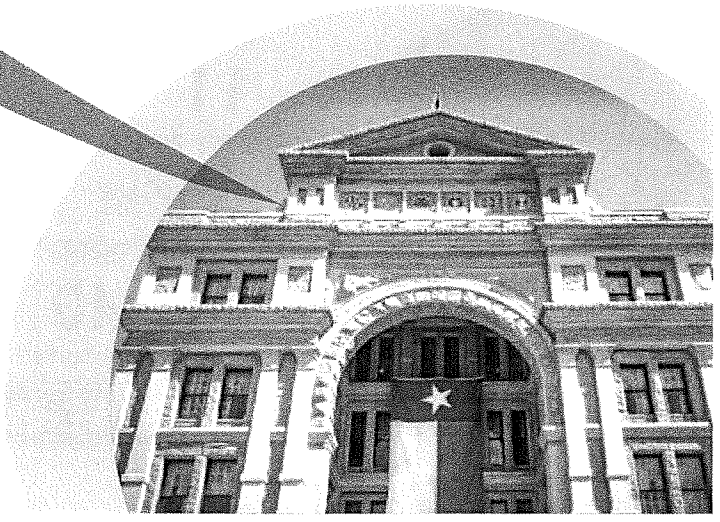
Spread: 21" x 21.50"

CLASSIFIED ADS BY COLUMN WIDTH

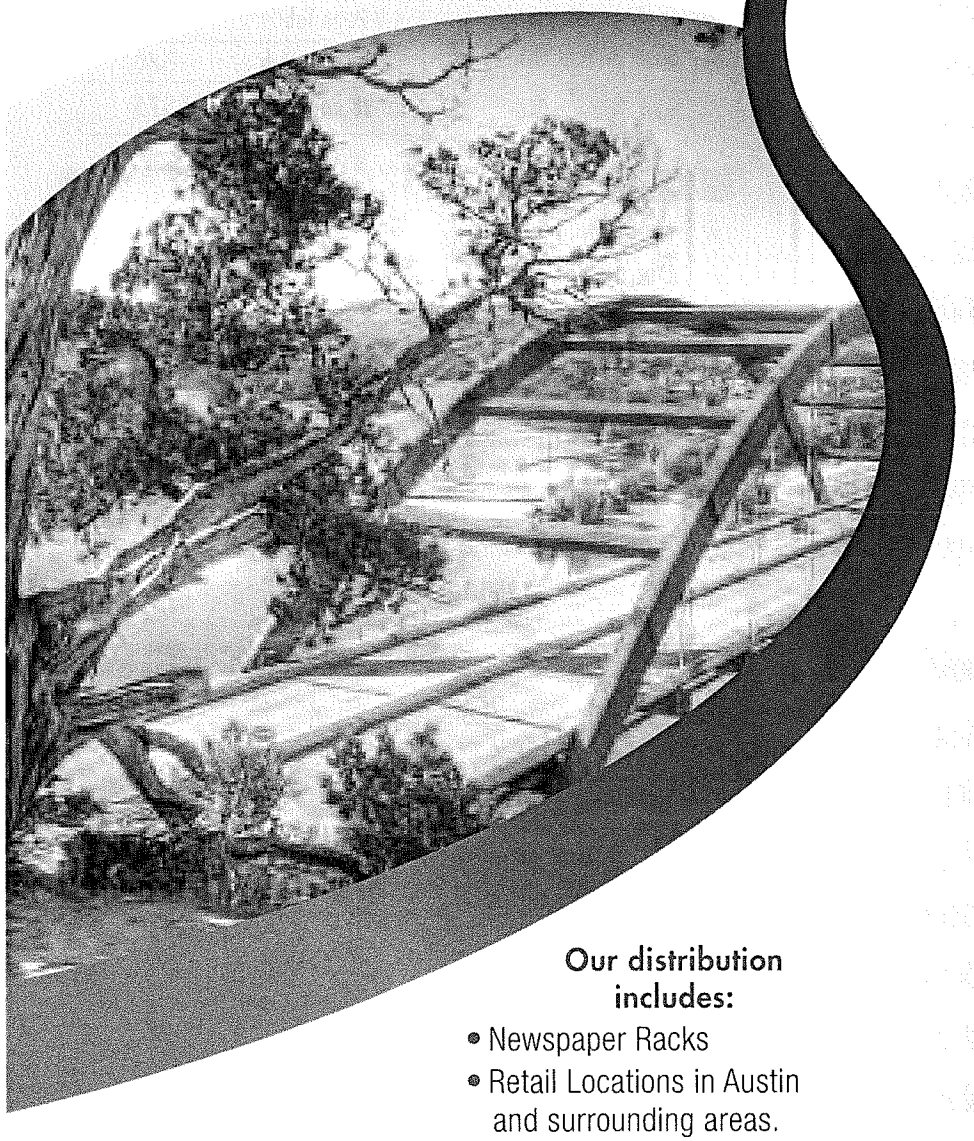
1Col. 1.10"	2Col. 2.38"	3Col. 3.65"	4Col. 4.92"
5Col. 6.19"	6Col. 7.46"	7Col. 8.73"	8Col. 10"

ISSUE & DEADLINE

- **El Mundo Newspaper** is published every Thursday, except Thanksgiving and the first week of the year.
- **Camera Ready Ads Reservation:** Friday preceding publication date, at 5pm.
- **Materials:** Monday before 2pm.
- **For Non-Camera Ready Ads, space reservation and materials:** Monday before publication date at 5pm.



DISTRIBUTION



Our distribution includes:

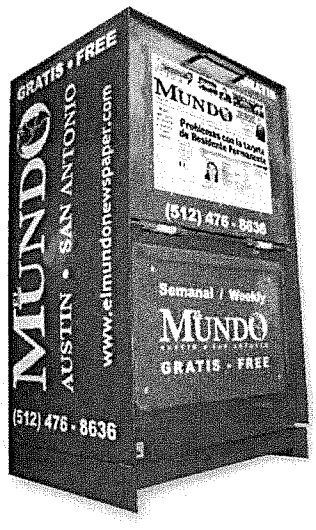
- Newspaper Racks
- Retail Locations in Austin and surrounding areas.

We distribute the paper in:

inside
11
community clinics
CommUnityCare HEALTH CENTERS

outside
2
SUPERMERCADO EL RANCHO

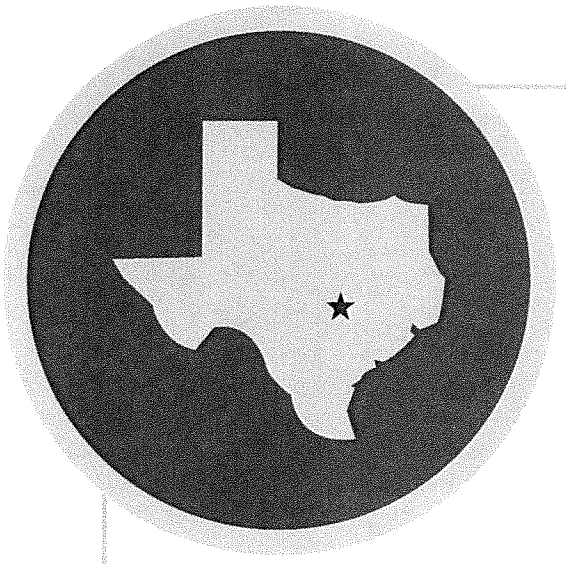
inside
40
supermarkets
H-E-B

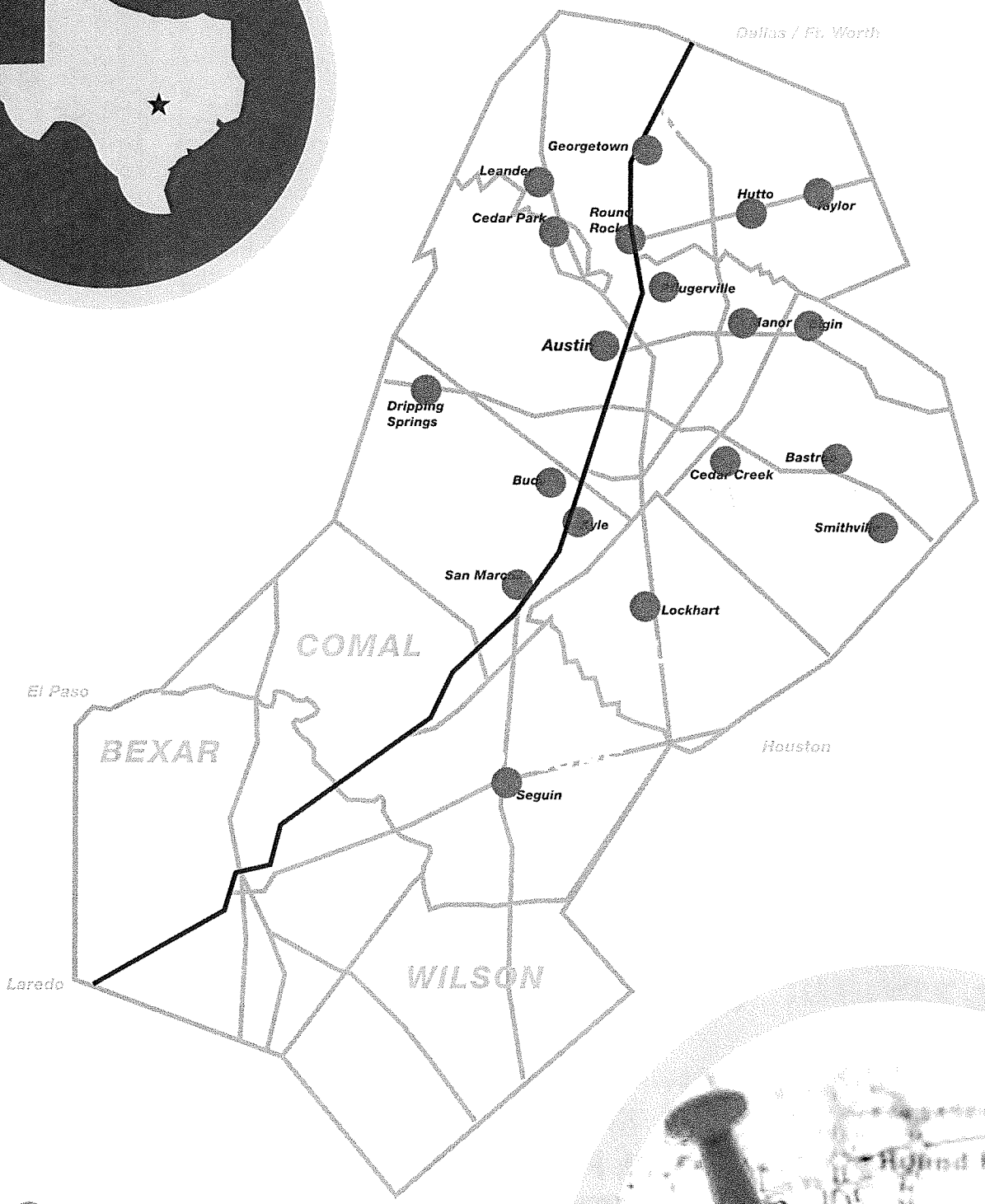


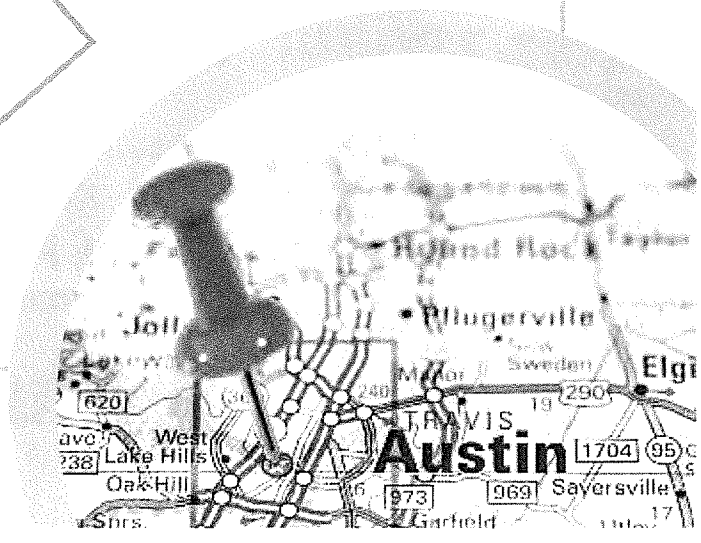
Zip Code	Zone	Circulation
78701-78702	Austin	2025
78703-78704	Austin	2125
78705	Austin	25
78719-78722	Austin	430
78723-78724	Austin	2095
78727-78729	Austin	220
78735 - 78736	Austin	80
78741-78742	Austin	2550
78744-78746	Austin	3435
78748-78749	Austin	65
78751-78752	Austin	1705
78753	Austin	2200
78754-78757	Austin	445
78758	Austin	1340
78660	Pflugerville	850
78664-78681	Round Rock	2025
78602	Bastrop	700
78610	Buda	500
78612	Cedar Creek	500
78613	Cedar Park	500
78617	Del Valle	550
78621	Elgin	500
78626-78628	Georgetown	500
78634-78640	Hutto - Kyle	500
78644	Lockhart	185
78653	Manor	300
78130	New Braunfels	600
78666	San Marcos	550
76574	Taylor	500

Total 28,000 Copies Weekly

DISTRIBUTION (MAP)

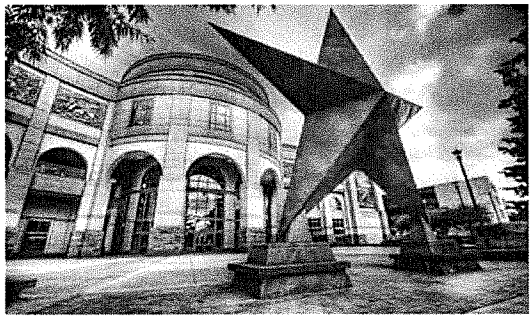


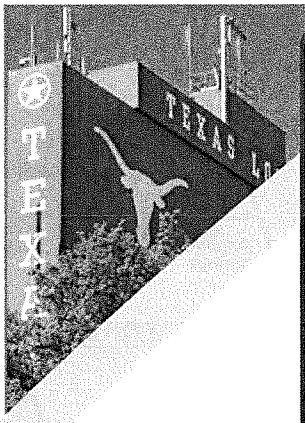


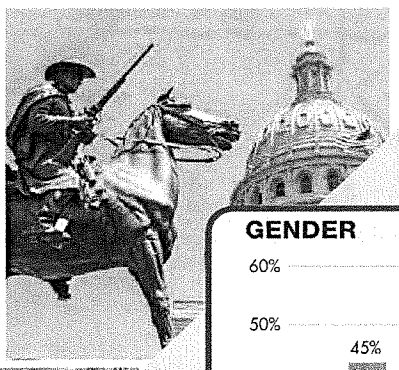


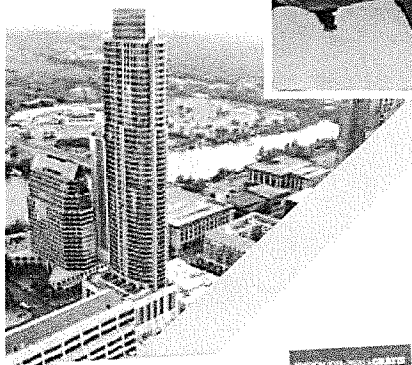
Areas of Distribution

EL MUNDO NEWSPAPER READER'S PROFILE





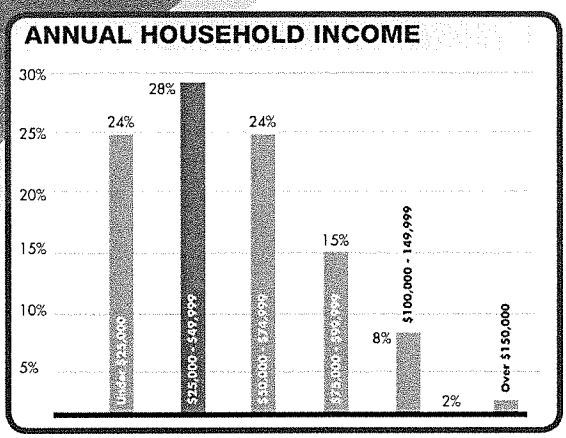


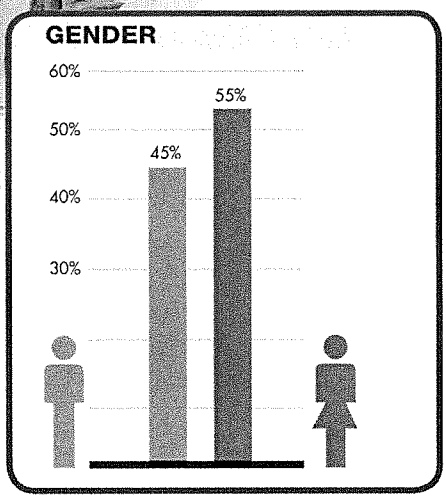


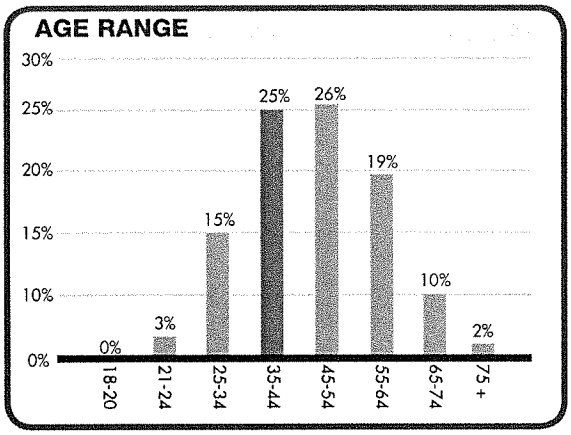
SPECIAL ANNUAL PUBLICATION

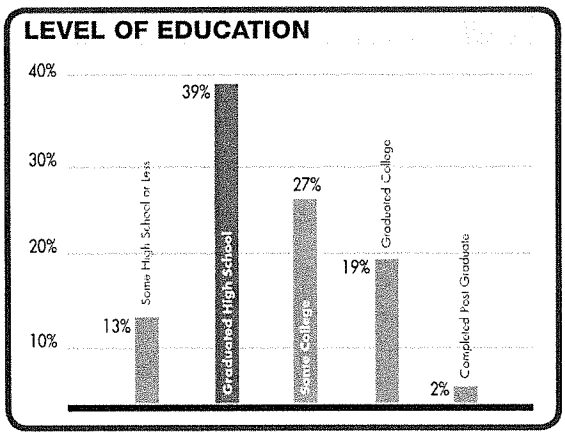
PRODUCED BY

El Mundo
AUSTIN









(1)

TCEQ Registration Form

November 29, 2022

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Paul Sarahan

Mailing Address: 7600 N. Capital of Texas Hwy, Bldg B, Suite 200

Physical Address (if different): _____

City/State: Austin, Tx **Zip:** 78731

This information is subject to public disclosure under the Texas Public Information Act

Email: psarahan@enochkever.com

Phone Number: (512) 615-1200

- Are you here today representing a municipality, legislator, agency, or group? ☒ Yes ☐ No

  If yes, which one? Shield Ranch

☒ **Please add me to the mailing list.**

☒ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Tuesday, March 11, 2025 5:12 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: WQ0016111001
Attachments: Reconsideration of Executive Director's Decision

RFR

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: Laurie Gharis <Laurie.Gharis@tceq.texas.gov>
Sent: Tuesday, March 11, 2025 4:58 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: WQ0016111001

Laurie Gharis
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-1835
Cell Phone: 737-263-9116

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

Tammy Johnson

From: Sue Searles <doncorburg2@gmail.com>
Sent: Tuesday, March 11, 2025 4:51 PM
To: Laurie Gharis
Subject: Reconsideration of Executive Director's Decision

From: Sue Searles 512-288-3262
13004 Wells Fargo Trail
Austin, Texas 78737

I live in the Big Country neighborhood off Fitzhugh Road, probably about a mile (as the crow flies) from the proposed Fitzhugh Concert Venue.
If the permit is granted to the California developers the negative effects to our beautiful, peaceful neighborhood are numerous and devastating. In addition to light pollution, noise pollution, extreme stress on water supply, loss of wildlife and natural beauty, I personally am very concerned about the tremendous volume of traffic on Fitzhugh Road. If the road is left as is, a beautiful winding two lane road favored by bicyclists, it will bring not only extreme congestion, but extreme danger as hundreds (thousands?) of cars try to reach the venue. I'm an 86 year-old heart patient and shudder to think what it might be like for a needed ambulance to get through. If it's widened to provide for anticipated drivers uncountable numbers of trees, many small businesses, and homes will be destroyed.
Fitzhugh Road has been a small cherished piece of the beauty that has been Central Texas for many, many years. Please protect it from this destructive development of a 5000 seat music venue by denying all requested building permits.

Thank you for reconsidering.

RECEIVED
AUG 24 2023
By GW
CHIEF CLERKS OFFICE
2023 AUG 24 AM 9:52
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Texas Commission on Environmental Quality (TCEQ)

Office of the Chief Clerk MC-105

P.O. Box 13087 Austin, Texas 78711-3087

Re: Opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue

Dear Commissioners:

My name is Sue Searles and I live off Fitzhugh Road in a neighborhood called Big Country. I am writing to implore TCEQ to deny the permit for Blizexas LLC Music Venue. While my neighborhood is perhaps five miles or so from the proposed venue and will probably miss many of the extremely unwelcome changes the proposed venue would bring, we nonetheless will be greatly affected by the environmental changes that will surely occur.

Many, probably even most of us, moved here for the natural beauty, the "country" atmosphere of this area. We are blessed with many many trees, primarily Juniper and Live Oak, and have quite a variety of wildlife. Having breakfast on my front porch almost daily, I frequently enjoy, deer, rabbits, a great variety of birds, and occasionally a fox right in my front yard. Having moved to Big Country in 1995 and being a walker, I have enjoyed over the years an occasional wild turkey, covey of quail, roadrunner, possum, garden snake, deer family, and once a young wildcat- – all living among the plethora of wildflowers. I fear the great air, noise, light and water pollution potential of this venue will kill or drive away the plants, animals, water availability, and peaceful atmosphere of our very special paradise – Fitzhugh Road and adjoining areas--destroying the many beautiful natural benefits of our homes.

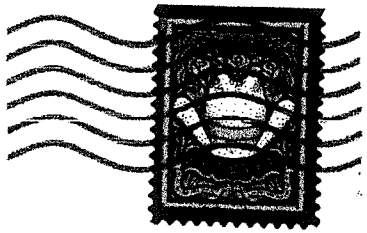
Please listen carefully to the people who know this area, best and who love it for the way in enriches our lives -- not our bank accounts. You can deny the permit for Blizexas Music Venue. Please do!

Sue Searles

Sue Searles
13004 Wells Fargo Trail
Austin, Texas 78737
512 288 3262
doncorburg2@gmail.com
August 22, 2023

Seeeles
13004 Wells Fargo TR.
Austin Texas
78737

AUSTIN TX 786
RIO GRANDE DISTRICT
22 AUG 2023 PM 2 L



Texas Commission on Environmental
Quality
Office of Chief Clerk
MC 105
PO Box 13087
Austin Texas 78711-3087

RECEIVED
AUG 24 2023
TCEQ MAIL CENTER
DA

CHIEF CLERKS OFFICE
2023 AUG 24 AM 9:
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

78711-308787

Kimberly Muth

From: PUBCOMMENT-OCC
Sent: Wednesday, August 16, 2023 10:39 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

From: doncorburg@aol.com <doncorburg@aol.com>
Sent: Tuesday, August 15, 2023 4:23 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Sue Searles

EMAIL: doncorburg@aol.com

COMPANY:

ADDRESS: 13004 WELLS FARGO TRL
AUSTIN TX 78737-9502

PHONE: 5122883262

FAX:

COMMENTS: Dear Commissioners: My name is Sue Searles and I live off Fitzhugh Road in a neighborhood called Big Country. I am writing to implore TCEQ to deny the permit for Blizexas LLC Music Venue. While my neighborhood is perhaps five miles or so from the proposed venue and will probably miss many of the extremely unwelcome changes the proposed venue would bring, we nonetheless will be greatly affected by the environmental changes that will surely occur. Many, probably even most of us, moved here for the natural beauty, the "country" atmosphere of this area. We are blessed with many many trees, primarily Juniper and Live Oak, and have quite a variety of wildlife. Having breakfast on my front porch almost daily, I frequently enjoy, deer, rabbits, a great variety of birds, and occasionally a fox right in

my front yard. Having moved to Big Country in 1995 and being a walker, I have enjoyed over the years an occasional wild turkey, covey of quail, roadrunner, possum, garden snake, deer family, and once a young wildcat- – all living among the plethora of wildflowers. I fear the great air, noise, light and water pollution potential of this venue will kill or drive away the plants, animals, water availability, and peaceful atmosphere of our very special paradise – Fitzhugh Road and adjoining areas--destroying the many beautiful natural benefits of our homes. Please listen carefully to the people who know this area, best and who love it for the way in enriches our lives -- not our bank accounts. You can deny the permit for Blizexas Music Venue. Please do! Sue Searles 13004 Wells Fargo Trail Austin, Texas 78737 512 288 3262 doncorburg2@gmail.com

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Wednesday, March 26, 2025 8:07 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: jsehoniv@gmail.com <jsehoniv@gmail.com>
Sent: Wednesday, March 26, 2025 8:05 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: John Sehon

EMAIL: jsehoniv@gmail.com

COMPANY:

ADDRESS: 5206 FM 1960 Rd. W
Houston, TX 77069

PHONE: 8322489169

FAX:

COMMENTS: Please consider this my formal request for a contested case hearing.

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Tuesday, April 1, 2025 3:49 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H
RFR

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: ss5945@aol.com <ss5945@aol.com>
Sent: Monday, March 31, 2025 4:54 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Connie Shepherd

EMAIL: ss5945@aol.com

COMPANY:

ADDRESS: 13016 Winding Creek Rd.
Austin, TX 78736

PHONE: 5126940354

FAX:

COMMENTS: I am requesting a Contested Case Hearing with regard to the approved permit by TCEQ for Blizexas, LLC. and requesting reconsideration of letting them build out this venue. They are proposing a large facility to hold 2,000 plus people. It is planned to be on Fitzhugh and Trautwein Rd. All of the roads going to and from this venue are two lane and in need of much repair to accommodate the number of people going to/from the venue. The roads are already congested during certain hours and be will be even more congested with this amount of activity. If an emergency vehicle has to get to someone in need, it will be very difficult, or at the worst, too late! The light pollution that will affect this area is also a concern, which is considered an International Dark Sky. The proposed facility's wastewater system and storm runoff could potentially pose risk to local water sources including Barton Creek. Again, if it's permitted, I can't imagine the number of large trucks going to/from to build out the facility, which in turn is troubling because of the destruction to the roads. I love music; the reason I moved to Austin, but do not feel this is an ideal location. I moved to the country to enjoy the beautiful surroundings and quite time that will be destroyed.. not only for me and my family but for future generations. Please reconsider this application for the good of our community. Connie Shepherd 13016 Winding Creek Rd., Austin, TX 78736 512-694-0354; ss5945@aol.com

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 1:45 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: claudiasmth@gmail.com <claudiasmth@gmail.com>
Sent: Sunday, January 28, 2024 8:45 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Claudia Smith

EMAIL: claudiasmth@gmail.com

COMPANY:

ADDRESS: 201 CROSSROADS DR
DRIPPING SPRINGS TX 78620-3160

PHONE: 5125859975

FAX:

COMMENTS: My name is Claudia Smith and I own and live at the property with the address 201 Crossroads Dr. as my primary residence. The property is approximately within 3 miles from the proposed development. {I also own a well that is approximately within 3 miles from the proposed development.} I would like to request a contested case hearing for the wastewater permit for the proposed development, as I have multiple concerns regarding the proposed development and the negative impacts it will have on the surrounding properties. I am deeply concerned for the impact of such a large venue for the area and the harmful effects on the ground water and run off into very nearby creeks. My family has lived at our current residence since November 2004. We have encountered some very rainy years that had major run off

of storm water, and droughts that caused us to greatly alter our water usage because of the decline of the water wells of our neighborhood. I believe the proposed venue of the that size would have the potential to negatively impact the ground water, storm water and wastewater for the surrounding family homes and other properties surrounding the venue.

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Friday, March 28, 2025 12:34 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Sorenson TCEQ Letter 032725.pdf

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: rhsorenson@mac.com <rhsorenson@mac.com>
Sent: Thursday, March 27, 2025 5:40 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Richard Sorenson

EMAIL: rhsorenson@mac.com

COMPANY:

ADDRESS: 11400 Crumley Ranch Road
Austin, TX 78738

PHONE: 5126379200

FAX:

COMMENTS: Respectfully requesting a Contested Hearing on the afforemention permit application

Richard and Tracey Sorenson
11400 Crumley Ranch Road
Austin, Texas 78738
rhsorenson@mac.com
512-637-9200

March 26, 2025

Office of the Chief Clerk, MC 105
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

RE: Contested Case Hearing Request for Domestic Wastewater Permit No. WQ0016111001 filed by Blizexas, LLC

To the Office of the Chief Clerk:

My name is Richard Sorenson, and I reside on Crumley Ranch Road in Travis and Hays County. My wife, Tracey, and I own approximately 75 +/- acres of land that lies approximately 50/50 on both Travis and Hays Counties. We have lived here for more than 9 years. We are submitting these supplemental comments to express our ongoing concerns regarding the Domestic Wastewater Permit No. WQ0016111001 filed by Blizexas, LLC, and to formally request a contested case hearing on this matter.

Proximity and Environmental Impact

Our property is located approximately 0.25 miles from the proposed wastewater discharge site for the proposed music venue. We are deeply concerned that the permit, if granted, will negatively impact the environment – including the pristine streams, native wildlife, and overall ecosystem of our land. We manage our property under a certified wildlife management plan supporting a wide variety of species, including whitetail deer, Rio Grande turkey, frogs, fish, and many songbirds.

Concerns about Wastewater Discharge

Blizexas, LLC proposes to install a drip irrigation system to discharge up to 12,000 gallons of wastewater per day from the planned music venue. This volume of wastewater poses a serious risk to the Trinity Aquifer, which supplies drinking water to thousands of Central Texans. The applicant has not provided accurate wastewater volume estimates and has failed to adequately characterize the site's complex geology. The entire proposed site lies above limestone and karst features, allowing rapid percolation of water into the Edwards Aquifer Recharge Zone. This creates a clear risk of contamination to critical groundwater resources.

Soil and Erosion Issues

We are also concerned about the lack of existing topsoil at the proposed drip field location. Although the applicant plans to bring in additional soil, the source and quality of that soil have not been disclosed. Additionally, a detailed grading plan has not been submitted to show how the land will be prepared to support the irrigation system. The proposed site includes slopes greater than 10%, making it highly susceptible to runoff and erosion. Yet, the application lacks a clear control strategy, compounding the site's environmental vulnerability.

Threats to Water Quality

Drainage from the proposed site flows directly into the Barton Creek watershed – an environmentally sensitive and protected ecosystem. Wastewater discharge into this watershed could introduce excess nutrients such as nitrogen and phosphorus, leading to algae blooms, degraded water quality, and harm to aquatic and terrestrial species. Contaminated water could also pose risks to livestock and wildlife that depend on the natural streams. Given these potential impacts, we urge the TCEQ to impose stringent effluent limits consistent with those used to protect other sensitive areas:

- Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) should not exceed 5 mg/L,
- Ammonia-Nitrogen should not exceed 2 mg/L, and
- Phosphorus should not exceed 1 mg/L.

Stormwater Runoff from Impervious Cover

The proposed development includes a large parking lot covering more than 60% of the site with impervious material. This will significantly increase stormwater runoff, which must be addressed in the TLAP permit. The application fails to identify measures to prevent stormwater from transporting contaminants – such as oil, grease and heavy materials – into Barton Creek. Furthermore, the proposed wastewater system does not appear designed to handle runoff during heavy rain events. For example, a recent four-day storm dropped nearly four inches of rain in our area, causing widespread runoff. Without adequate controls, such events could overwhelm the system and lead to pollution of the surrounding watershed.

Request for a Contested Case Hearing

Given the substantial environmental and public health concerns outlines above, we formally request a contested case hearing on this matter. The permit application raises numerous critical issues that require further expert review, including:

- Inadequate characterization of the site geology,
- Vulnerability of the Trinity and Edwards Aquafer
- Erosion risks due to steep slopes and insufficient topsoil,
- Potential introduction of pollutants into the Barton Creek watershed, and
- Absence of a comprehensive stormwater management plan.

These deficiencies present serious risks of long-term harm to the environment and to public drinking water supplies.

While we are not opposed to responsible growth, we believe that this type of development is inappropriate for this sensitive area of Travis and Hays Counties. We respectfully urge the Texas Commission on Environmental Quality to grant our request for a contested case hearing and take all necessary steps to protect our land, water and wildlife.

Sincerely,

Richard and Tracey Sorenson
11400 Crumley Ranch Road
Austin, Texas 78738
rhsorenson@mac.com
512-637-9200

Office of the Chief Clerk; MC 105
Texas Commission on Environmental Quality
PO Box 13087
Austin, TX 78711-3087

RECEIVED
JAN 29 2024
AT PUBLIC MEETING

Subj: Permit No WQ0016111001
Date: January 29, 2024

Dear TCEQ Representatives,

Related to Domestic Wastewater Permit No WQ0016111001 filed by Blizexas, LLC, I respectfully request TCEQ to consider disallowance of the permit. My property is located approximately 0.25 miles from the proposed wastewater discharge location.

Blizexas, LLC is proposing to install a drip irrigation system to discharge wastewater from their proposed music venue. I am very concerned that this amount of wastewater has the potential to impact the Trinity Aquifer and I do not feel that the applicant adequately characterized the geology of the site.

I am concerned with the lack of topsoil at the proposed location. The applicant is proposing to bring in additional soil for the proposed irrigation field. The area where the applicant is proposing to install the drip fields has greater than 10% slope, which I believe is problematic.

The drainage from this area feeds directly into Barton Creek. Allowing nutrients like nitrogen and phosphorus in the wastewater has the potential to create algae blooms and destroy the aesthetics and quality of our streams.

The applicant is proposing to install a large parking lot to accommodate the 5,000 seat music venue. This creates a significant amount of impervious cover that will allow oily waste from automobiles to potentially run into Barton Creek.

While I am not opposed to growth, I feel that this type of growth is not supported in this area of Travis/Hays County.

Sincerely,

Richard and Tracey Sorenson
11400 Crumley Ranch Road
Austin, Texas 78738
512/637-9200

Kimberly Muth

From: PUBCOMMENT-OCC
Sent: Thursday, August 17, 2023 1:14 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Sorenson TCEQ Request for Public Meeting 081623.pdf

eComment = PM
Attachment = PM

From: rhsorenson@mac.com <rhsorenson@mac.com>
Sent: Thursday, August 17, 2023 9:54 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Richard Sorenson

EMAIL: rhsorenson@mac.com

COMPANY:

ADDRESS: 11400 CRUMLEY RANCH RD
AUSTIN TX 78738-7073

PHONE: 5126379200

FAX:

COMMENTS: Respectfully request Public Meeting to answer important questions. Our property is 0.146 miles from the Proposed Venue/TLAP location. thank you Richard Sorenson

Attention: Office of the Chief Clerk
MC 105, Texas Commission on Environmental Quality
PO Box 13087
Austin, Texas 78711-3087

August 17, 2023

Greetings – Richard and Tracey Sorenson - we reside at 11400 Crumley Ranch Road. We are writing in relation to Wastewater Permit Application WQ0016111001 filed by Blizexas, LLC. We are very concerned the approval of this Application would have a significant impact on the environment of the area.

As measured by the TCEQ Mapping Application, the closest edge of our property is 0.146 miles from the nearest corner of the property in the Application (approximately 770 feet).

We manage our property under the Hays County & Travis County Wildlife Management Programs. We enjoy the abundance of wildlife in our area – we frequently see White Tail Deer, Fox, Jack Rabbits, Owls, and a host of Songbirds. The area is also known to have Golden Cheeked Warblers. We regularly provide water and sustenance for noted wildlife.

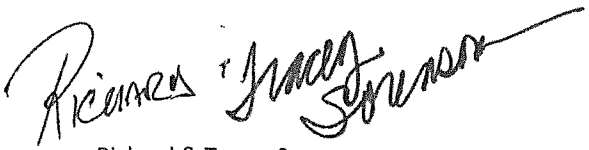
We have a variety of concerns related to the development of the proposed Concert Venue. The first relates to impact on Ground Water – the source for drinking water for our entire region. In addition to potential contamination from wastewater discharge, the Trinity Aquifer is stressed, and neighboring wells are going dry every day around us.

A second concern is the condition of soil in our area. We know from our property; the topsoil is almost non-existent and our landscape is extremely rocky. The combination of slope and rocky soil has the potential for an extreme amount of runoff when heavy rains hit. Barton Creek is located just downhill from the site. Our concern is runoff that will pollute the pristine waters of Barton Creek, a jewel of Central Texas. Runoff has the potential to create algae blooms downstream, flowing all the way into Austin.

Tracey and I truly enjoy live music and understand development will continue in our area – the issue in this case is a complete mismatch in terms of its potential impact and fragile environment of the immediate area.

We respectfully request a Public Meeting be held to address the concerns noted in this document and the concerns so many of our neighbors have related to the referenced Application.

Best regards,



Richard & Tracey Sorenson
11400 Crumley Ranch Road
Austin, Texas 78738
512/637-9200

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Wednesday, April 2, 2025 4:26 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H
RFR

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: Anniespade9@gmail.com <Anniespade9@gmail.com>
Sent: Wednesday, April 2, 2025 10:35 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Annie Spade

EMAIL: Anniespade9@gmail.com

COMPANY:

ADDRESS: 13508 Trail Driver
Austin , TX 78737

PHONE: 5124680699

FAX:

COMMENTS: Contested case hearing To Ms Kelly Keel I have lived at 13508 Trail Driver for 30 years. I am strongly and respectfully requesting a reconsideration of your decision for the Blizexas LLC- TLAP Permit No WQ0016111001 My reasons are these five following: Little to No Flow in Barton Creek in this Area I cross Barton Creek at the low water crossing on Fitzhugh Rd daily. At the crossing, this major creek has had little to no water flowing for at least two years. Effluent from this outdoor music venue would enter very near this area, so that most, if not all, of the creek's flow at that point would be waste water! The Exemplary Stewardship of 10% of Barton Creek and tributary Rocky Creek Just downstream from the point-of-entry for this effluent, actually "next door" in terms of land ownership, Barton Creek has benefitted from generations of award-winning stewardship by the Shield-Ayers Family, resulting in increased flow for both Barton Creek and its tributary Rocky Creek. Making a Huge Difference for Underprivileged Children I have been so inspired by the devoted and generous outreach this family has provided for underprivileged children from the Austin area, beginning in elementary school, at their summer camp "El Ranchito for almost 20 years. Older children graduate and return as counselors. This program includes opportunities for swimming in the until-now pristine waters of the creek, and doing nature study on its banks. You may remember that I mentioned the program during a public comment I made to the commission on March 13. Chairwoman Paup was so moved that she asked me for more specific information about the program as I was leaving the podium. Safeguarding Barton Creek is without question something that will serve Austin and our state far into the future. Until Now, NO Wastewater has EVER been allowed in this Important Creek The City of Austin, along with The Nature Conservancy, holds the conservation easement on the 6600 acres of the Shield-Ayers-Bowen Family Ranch. For generations, Barton Creek, flowing into the city from the west, has been cared for by all who live nearby. What an achievement this has been for the City of Austin, and how many people enjoy the unmeasurable benefits! This Proudly-Pristine Waterway to be Sullied for a Music Venue! Water, of course, is arguably our most precious and swiftly-dwindling resource. Difficult decisions have to be made to protect both the quantity and quality of the water we have. That the commission would decide the fragile water of Barton Creek ought to be tainted, simply to accommodate an outdoor music venue, is not forward-thinking nor honoring of the very great gift we've inherited. Further, when one considers that this venue will also 1. as neighbor to Dripping Springs sully a "Dark Sky" community's nighttime view; 2. blast loud music into a wide patchwork-landscape of small acreages (including my own acre and a half) where people still enjoy the quiet and gently-magical sounds of owls, nightjars, frogs and crickets; 3. and make our two-lane winding and hilly "only escape out in case of an emergency" Fitzhugh Road (with no shoulder at all) into a massive traffic jam, when we're already nervous about the ever-increasing danger of wildfire out here the idea that first-ever effluent would be allowed into Barton Creek to accommodate it, becomes a grievous and unconscionable one. You may remember that I mentioned the El Ranchito program at Shield Ranch during a public comment I made to the commission on March 13. Chairwoman Paup was so moved that she asked me for more specific information about the program as I was leaving the podium. Safeguarding Barton Creek is without question something that will serve Austin and our state far into the future! For these reasons, I respectfully request that you allow a contested case hearing on this permit. I believe it's a decision for which you and the commission will be proud. Sincerely, Annie Spade (512) 468-0699

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Wednesday, April 2, 2025 4:25 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H
RFR

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: Anniespade9@gmail.com <Anniespade9@gmail.com>
Sent: Tuesday, April 1, 2025 11:07 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Annie Spade

EMAIL: Anniespade9@gmail.com

COMPANY:

ADDRESS: 13508 Trail Driver
Austin , TX 78737

PHONE: 5124680699

FAX:

COMMENTS: Contested case hearing To Ms Kelly Keel I have lived at 13508 Trail Driver for 30 years. I am strongly and respectfully requesting a reconsideration of your decision for the Blizexas LLC- TLAP Permit No WQ0016111001 My reasons are these five following: Little to No Flow in Barton Creek in this Area I cross Barton Creek at the low water crossing on Fitzhugh Rd daily. At the crossing, this major creek has had little to no water flowing for at least two years. Effluent from this outdoor music venue would enter very near this area, so that most, if not all, of the creek's flow at that point would be waste water! The Exemplary Stewardship of 10% of Barton Creek and tributary Rocky Creek Just downstream from the point-of-entry for this effluent, actually "next door" in terms of land ownership, Barton Creek has benefitted from generations of award-winning stewardship by the Shield-Ayers Family, resulting in increased flow for both Barton Creek and its tributary Rocky Creek. Making a Huge Difference for Underprivileged Children I have been so inspired by the devoted and generous outreach this family has provided for underprivileged children from the Austin area, beginning in elementary school, at their summer camp "El Ranchito for almost 20 years. Older children graduate and return as counselors. This program includes opportunities for swimming in the until-now pristine waters of the creek, and doing nature study on its banks. You may remember that I mentioned the program during a public comment I made to the commission on March 13. Chairwoman Paup was so moved that she asked me for more specific information about the program as I was leaving the podium. Safeguarding Barton Creek is without question something that will serve Austin and our state far into the future. Until Now, NO Wastewater has EVER been allowed in this Important Creek The City of Austin, along with The Nature Conservancy, holds the conservation easement on the 6600 acres of the Shield-Ayers-Bowen Family Ranch. For generations, Barton Creek, flowing into the city from the west, has been cared for by all who live nearby. What an achievement this has been for the City of Austin, and how many people enjoy the unmeasurable benefits! This Proudly-Pristine Waterway to be Sullied for a Music Venue! Water, of course, is arguably our most precious and swiftly-dwindling resource. Difficult decisions have to be made to protect both the quantity and quality of the water we have. That the commission would decide the fragile water of Barton Creek ought to be tainted, simply to accommodate an outdoor music venue, is not forward-thinking nor honoring of the very great gift we've inherited. Further, when one considers that this venue will also 1. as neighbor to Dripping Springs sully a "Dark Sky" community's nighttime view; 2. blast loud music into a wide patchwork-landscape of small acreages (including my own acre and a half) where people still enjoy the quiet and gently-magical sounds of owls, nightjars, frogs and crickets; 3. and make our two-lane winding and hilly "only escape out in case of an emergency" Fitzhugh Road (with no shoulder at all) into a massive traffic jam, when we're already nervous about the ever-increasing danger of wildfire out here the idea that first-ever effluent would be allowed into Barton Creek to accommodate it, becomes a grievous and unconscionable one. You may remember that I mentioned the El Ranchito program at Shield Ranch during a public comment I made to the commission on March 13. Chairwoman Paup was so moved that she asked me for more specific information about the program as I was leaving the podium. Safeguarding Barton Creek is without question something that will serve Austin and our state far into the future! For these reasons, I respectfully request that you allow a contested case hearing on this permit. I believe it's a decision for which you and the commission will be proud. Sincerely, Annie Spade (512) 468-0699

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Monday, December 5, 2022 8:17 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: Anniespade9@gmail.com <Anniespade9@gmail.com>
Sent: Sunday, December 4, 2022 6:24 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Annie Spade

EMAIL: Anniespade9@gmail.com

COMPANY:

ADDRESS: 13508 TRAIL DRIVER
AUSTIN TX 78737-9529

PHONE: 5124680699

FAX:

COMMENTS: My Public Comment on Blizexas (Rockingwall) TLAP Permit –In response to TCEQ Draft Permit of 6/15/2022 • I live at 13508 Traildriver St in northern Hays County, less than two miles from the proposed venue. I have lived here for over 27 years on an acre and a half. We have a well and collect rainwater, though we do not have a rainwater system in-house and are thus reliant on the well. Connecting to city water is cost prohibitive for us. I have paid off my mortgage, working for a non-profit preschool in Bee Cave for the past 29 years. I cross Barton Creek and pass the

proposed site every day on my way to work. The creek has been bone dry for a year and in the past decade, even when it runs, it runs very sporadically. • I write to state my objections to the proposed TLAP Permit No. WQ0016111001 to authorize disposal of treated wastewater at a volume not to exceed 12,000 gallons per day onto 2.75 acres. The wastewater treatment facility and disposal area are located 0.25 miles east of the intersection of Crumley Ranch Road and Fitzhugh Road in Hays County, Texas, 78737. Its disposal area is located in the Edwards Aquifer Contributing Zone near Barton Creek. • I have concerns about the Draft Permit of Blizexas, LLC for proposed TLAP Permit No. WQ0016111001, including the impacts of disposal and runoff on: o Groundwater and surface water contamination; and o Waste odors. Disposal and runoff • Other irrigation fields in the area have experienced numerous problems, including: o Poor soils unable to absorb large amounts of water; o Runoff of effluent from saturated irrigation fields; and o Insufficient storage capacity to store effluent when soils are saturated – i.e. 3 days of storage noted in draft permit may not be sufficient for the location. Surface water • I am concerned about the potential impact of the site's operations and the proposed land application of wastewater next to Barton Creek and the waters running into Barton Creek. o The 2022 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) states that Barton Creek is classified for high aquatic life. o What plans are in place to divert storm runoff when the disposal areas are saturated to ensure there is no adverse impact on Barton Creek? • I have concerns about the amount of wastewater that will be generated at the venue. There is limited information about the number of concerts per week to be held at Rockingwall. It seems that information must be made available to determine critical technical details accurately. • I have concerns about runoff, locations of the drip fields, and size of the property relative to the requirements to properly manage the TLAP permit. o Rockingwall should be required to disclose planned locations for parking lots and total amount of impervious cover from all impervious surfaces to ensure that engineering assumptions are correct under the draft permit. o Has TCEQ conducted a site visit to determine if the property is large enough to accommodate all requirements? If not, what is TCEQ's basis for believing that the proposed TLAP facility will not harm Barton Creek or adjacent properties? Groundwater • I have concerns regarding the placement of waste within the Edwards Aquifer Contributing Zone. o The thin soil characteristic of the disposal area poses a potential risk to not only the Edwards Aquifer but also the Trinity Aquifer, as many neighboring property owners rely on the Trinity as their sole source of water for domestic and commercial use. o I request that the Rockingwall amphitheater submit an Edwards Aquifer Contributing Zone plan, if it hasn't already done so. o It seems that a proposed groundwater well is identified in the application. What is the capacity of the well? Is the well currently permitted with the Hays Trinity Groundwater Conservation District? Is there enough potential water production to maintain grass production as required under the TLAP permit? Odor • Rockingwall only proposes buffer zones for odor control 150 feet from the property line. Can TCEQ ensure that Rockingwall's sludge solids management plan is sufficient to protect neighboring properties from odors from the wastewater system? Also, is there adequate capacity for Wastewater Residuals Management to handle offsite disposal under their current permit?

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Tuesday, April 1, 2025 3:49 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

RFR

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: rspinn214@gmail.com <rspinn214@gmail.com>
Sent: Tuesday, April 1, 2025 3:30 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Roslynn Spinn

EMAIL: rspinn214@gmail.com

COMPANY:

ADDRESS: 13315 Trail Driver St.
Austin, TX 78737

PHONE: 5126269459

FAX:

COMMENTS: Dear Sir/ Madame, I deeply request reconsideration of the director's decision for this permit. Your letterhead explicitly describes TCEQ as "Protecting Texas by Reducing and Preventing Pollution". This venue, if built, will most definitely increase pollution through run off into our water systems, noise and light pollution, trash tossed onto the sides of the roads and the increased carbon footprint due to the traffic delays/backups on Fitzhugh, Trautwein, and Crumbley. This directly opposes your letterhead. I live less than 3 miles from this proposed venue and express the utmost concern of the increased chances of fire hazard due to cigarettes tossed from cars, the danger of the huge number of vehicles driving in this area late at night and most certainly after drinking, and the inability to access emergency help due to increased traffic before and after events. I sincerely ask you to reconsider your decision. This is not the appropriate or best location for this type of venue. With respect, Roslynn and Matt Spinn

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Tuesday, January 30, 2024 5:16 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: rspinn214@gmail.com <rspinn214@gmail.com>
Sent: Monday, January 29, 2024 8:19 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Roslynn Spinn

EMAIL: rspinn214@gmail.com

COMPANY:

ADDRESS: 13315 TRAIL DRIVER
AUSTIN TX 78737-9531

PHONE: 5126269459

FAX:

COMMENTS: I am concerned for apparent lack of adequate planning and study for wastewater upstream and downstream contamination and runoff.

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Wednesday, November 30, 2022 9:39 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Rockingwell Ranch

From: Roslynn Spinn <rspinn214@gmail.com>
Sent: Tuesday, November 29, 2022 1:20 PM
To: Info <Info@tceq.texas.gov>
Subject: Rockingwell Ranch

REGULATED ENTITY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Roslynn McDougal Spinn

EMAIL: rspinn214@gmail.com

ADDRESS: 13315 Trail Driver St. Austin,TX. 78737

PHONE: 5126268459

FAX:

COMMENTS: The proposed Fitzhugh Concert Venue raises concerns about impacts to water quality, from the facility's wastewater system to storm water run-off into Barton Creek. Additionally, Shield Ranch, a 6,400-acre, ecologically diverse wildland that is sustainably managed and permanently protected for the benefit of people and nature, is adjacent to the proposed site and makes up 10% of the Barton Creek watershed. Wastewater contains nutrients that will increase algae growth in Barton Creek. Excess algae will impair the appearance, recreational value, wildlife and their habitat, and overall water quality of Barton Creek, which is relied upon by Austinites of all ages. And since 2017, 81% of

all sewage discharge plants in the Hill Country, where Fitzhugh Concert Venue would be located, have exceeded at least one of their pollutant limits. If this proposed concert venue were to move forward, the sewage discharge would inevitably surpass its limits, producing significant, long-lasting impacts on those throughout the region.

Based on TCEQ rule Section 1.10(h), the TCEQ General Counsel has waived the filing requirements of Section 1.10(c) to allow the filing of comments, requests, or withdrawals using this online system. The General Counsel also has waived the requirements of Section 1.10(e) so that the time of filing your electronic comments or requests is the time this online system receives your comments or requests. Comments or requests are considered timely if received by 5:00 p.m. CST on the due date.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Thursday, January 25, 2024 4:06 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: jims@hhs1.com <jims@hhs1.com>
Sent: Thursday, January 25, 2024 3:01 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: MR James D Spry

EMAIL: jims@hhs1.com

COMPANY:

ADDRESS: 12350 PAULS VALLEY RD
AUSTIN TX 78737-9609

PHONE: 5128615552

FAX: 5128615552

COMMENTS: In addition to my earlier comments, I would like to request a contested case hearing. Thanks, JS

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Tuesday, November 29, 2022 8:12 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: jims@hhs1.com <jims@hhs1.com>
Sent: Tuesday, November 29, 2022 8:05 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME James D Spry

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: Texas

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: MR James D Spry

EMAIL: jims@hhs1.com

COMPANY: HHS

ADDRESS: 12350 PAULS VALLEY RD
AUSTIN TX 78737-9609

PHONE: 5124843612

FAX: 5124843612

COMMENTS: I own 100 acres almost across the street from this concert site @ 14409 Fitzhugh Rd, which houses www.loraleefoundation.org, as well as housing for employees & several family members, & am also principal owner of www.hhs1.com, which is our home office located on 130 acres at 12495 Silver Creek Rd, 2 miles away. This proposed concert venue will damage & pollute the local environment, as well as congest & damage Fitzhugh Road. The noise level will also intrude on the privacy of all within hearing distance. Please do not allow this use. Thanks, JS

16AUG '23 10:32

HHS

Jim Spry <jims@hhs1.com>

TCEQ OCC

Blizexas, LLC Music Venue, permit #WQ0016111001

1 message

Jim Spry <jims@hhs1.com> Fri, Aug 11, 2023 at 9:13 PM
To: info@www.tceq.texas.gov
Bcc: Cyndi High <chigh4616@gmail.com>

My property is 100 acres @ 14409 Fitzhugh Rd, & spans the area between Fitzhugh & Pauls Valley Rd, with Barton Creek flowing across it; we also house www.loraleefoundation.org & allow charities to host events here at no cost to them. Many of the charitable groups swim in the creek & the wastewater & trash from the concert venue will find its' way into the creek & aquifer; the site is a very poor choice for the installation of a subsurface drip irrigation system.

Please deny the issuance of this permit.
Sincerely,

AUG 17 2023

James D. Spry
Spry Family Farm owner
HHS Owner
home 512.861.5552 cell 512.484.3612
Healthcare | Resorts | Senior Living | Aviation

8/13/23

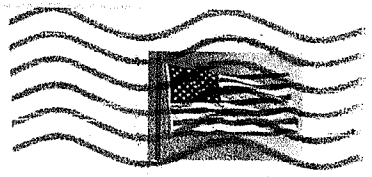
I forgot to say that my Fitzhugh gate is practically across the street from the proposed concert site. Please deny the issuance of this permit.

Thanks,

James D. Spry

SPRY
12350 PAULS VALLEY RD
AUSTIN, TX 78737

AUSTIN TX 786
RIO GRANDE DISTRICT
14 AUG 2023 PM 3 L



16AUG 23 10:37

Office of the Chief Clerk
TCEQ
P.O. Box 13087
AUSTIN, TX 78753

RECEIVED
AUG 1 3 2023
TCEQ MAIL CENTER
MVT

78711-308787

Tammy Johnson

From: PUBCOMMENT-OCC
Sent: Wednesday, March 26, 2025 1:48 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Van Ackeren TCEQ Ltr 3.26.25.pdf

H

Jesús Bárcena
Office of the Chief Clerk
Texas Commission on Environmental Quality
Office Phone: 512-239-3319

How is our customer service? Fill out our online customer satisfaction survey at:
www.tceq.texas.gov/customersurvey

From: tvanackeren@yahoo.com <tvanackeren@yahoo.com>
Sent: Wednesday, March 26, 2025 11:16 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Terri S Van Ackeren

EMAIL: tvanackeren@yahoo.com

COMPANY:

ADDRESS: 10017 Crumley Ranch Road
Austin, TX 78738

PHONE: 5127314119

FAX:

COMMENTS: Please accept our Contested Case Hearing Request for Domestic Wastewater Permit #WQ0016111001 filed by Blizexas, LLC. Thank you.

Terri & Tim Van Ackeren
Lazy T Ranch
10017 Crumley Ranch Road
Austin, TX 78738-6020

512-731-4119

March 25, 2025

Office of the Chief Clerk, MC 105
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Re: Contested Case Hearing Request for Domestic Wastewater Permit No. WQ0016111001 filed by Blizexas, LLC

To the Office of the Chief Clerk:

My name is Terri Van Ackeren, and I reside on Crumley Ranch Road in Travis County. My husband, Tim, and I own approximately 165 acres of land and have lived here for more than 18 years. We are submitting these supplemental comments to express our ongoing concerns regarding Domestic Wastewater Permit No. WQ0016111001 filed by Blizexas, LLC, and to formally request a contested case hearing on this matter.

Proximity and Environmental Impact

Our property is located approximately 1.01 miles from the proposed wastewater discharge site. We are deeply concerned that the permit, if granted, will negatively impact the environment—including the pristine streams, native wildlife, and overall ecosystem of our land. We manage our property under a certified wildlife management plan supporting a wide variety of species, including whitetail deer, Rio Grande turkey, frogs, fish, and over 40 species of birds (33 of which are migratory).

Of particular importance, our property is documented habitat for the Golden-cheeked Warbler, a federally protected, endangered species that nests exclusively in the oak-juniper woodlands of Central Texas. The introduction of wastewater discharge and increased development activity threatens this sensitive habitat by degrading air and water quality, increasing human disturbance, and fragmenting nesting areas. Any reduction in habitat quality could have irreversible impacts on this vulnerable species, further underscoring the need for heightened environmental protection and regulatory scrutiny.

Concerns About Wastewater Discharge

Blizexas, LLC proposes to install a drip irrigation system to discharge up to 12,000 gallons of wastewater per day from a planned music venue. This volume of wastewater poses a serious risk to the Trinity Aquifer, which supplies drinking water to thousands of Central Texans. The applicant has not provided accurate wastewater volume estimates and has failed to adequately characterize the site's complex geology. The entire proposed site lies above limestone and karst features, allowing rapid percolation of water into the Edwards Aquifer Recharge Zone. This creates a clear risk of contamination to critical groundwater resources.

Soil and Erosion Issues

We are also concerned about the lack of existing topsoil at the proposed drip field location. Although the applicant plans to bring in additional soil, the source and quality of that soil have not been disclosed. Additionally, a detailed grading plan has not been submitted to show how the land will be prepared to support the irrigation system. The proposed site includes slopes greater than 10%, making it highly susceptible to runoff and erosion. Yet, the application lacks a clear erosion control strategy, compounding the site's environmental vulnerability.

Threats to Water Quality

Drainage from the proposed site flows directly into the Barton Creek watershed—an environmentally sensitive and protected ecosystem. Wastewater discharge into this watershed could introduce excess nutrients such as nitrogen and phosphorus, leading to algae blooms, degraded water quality, and harm to aquatic and terrestrial species. Contaminated water could also pose risks to livestock and wildlife that depend on the natural streams. Given these potential impacts, we urge the TCEQ to impose stringent effluent limits consistent with those used to protect other sensitive areas:

- Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) should not exceed 5 mg/L,
- Ammonia-Nitrogen should not exceed 2 mg/L, and
- Phosphorus should not exceed 1 mg/L.

Stormwater Runoff from Impervious Cover

The proposed development includes a large parking lot covering more than 60% of the site with impervious material. This will significantly increase stormwater runoff, which must be addressed in the TLAP permit. The application fails to identify measures to prevent

stormwater from transporting contaminants—such as oil, grease, and heavy metals—into Barton Creek. Furthermore, the proposed wastewater system does not appear designed to handle runoff during heavy rain events. For example, a recent four-day storm dropped nearly four inches of rain in our area, causing widespread runoff. Without adequate controls, such events could overwhelm the system and lead to pollution of the surrounding watershed.

Request for Contested Case Hearing

Given the substantial environmental and public health concerns outlined above, we formally request a contested case hearing on this matter. The permit application raises numerous critical issues that require further expert review, including:

- Inadequate characterization of site geology,
- Vulnerability of the Trinity and Edwards Aquifers,
- Erosion risks due to steep slopes and insufficient topsoil,
- Potential introduction of pollutants into the Barton Creek watershed, and
- Absence of a comprehensive stormwater management plan.

These deficiencies present serious risks of long-term harm to the environment and to public drinking water supplies.

While we are not opposed to responsible growth, we believe that this type of development is inappropriate for this sensitive area of Travis and Hays Counties. We respectfully urge the Texas Commission on Environmental Quality to grant our request for a contested case hearing and take all necessary steps to protect our land, water, and wildlife.

Sincerely,

Terri & Tim Van Ackeren
Lazy T Ranch
10017 Crumley Ranch Road
Austin, TX 78738-6020

512-731-4119

3

TCEQ Registration Form

January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: Earl Lott Representing Terri & Tim Van Ackeren

Mailing Address: 104 Curacao Court

Physical Address (if different): _____

City/State: Lakeway TX **Zip:** 78738

This information is subject to public disclosure under the Texas Public Information Act

Email: Earllott@outlook.com

Phone Number: (512) 740-9058

- Are you here today representing a municipality, legislator, agency, or group? ☐ Yes ☑ No

  If yes, which one? _____

☐ **Please add me to the mailing list.**

☑ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☑ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 2:12 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Terri & Tim Rvised Comment Ltr2.docx

From: Earllott@outlook.com <Earllott@outlook.com>
Sent: Monday, January 29, 2024 2:07 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Earl Earl Lott

EMAIL: Earllott@outlook.com

COMPANY: Lott Governmental Affairs, LLC

ADDRESS: 104 CURACAO CT
LAKEWAY TX 78738-1776

PHONE: 5127409058

FAX:

COMMENTS: I am submitting comments on behalf of my client, Terri Van Ackeren

Terri & Tim Van Ackeren
Lazy T Ranch
10017 Crumley Ranch Road
Austin, TX 78738 -6020

January 29, 2024

Office of the Chief Clerk, MC 105
Texas Commission on Environmental Quality
PO Box 13087
Austin, TX 78711-3087

Re: Domestic Wastewater Permit No. WQ0016111001 filed by Blizexas, LLC

Office of the Chief Clerk:

My name is Terri Van Ackeren, I live on Crumley Ranch Road in Travis County. I am submitting these supplemental comments to express my continued concerns with domestic wastewater Permit NO. WQ0016111001 filed by Blizexas, LLC. My property is located approximately 1.01 miles from the proposed wastewater discharge location. My husband Tim and I own 165 +/- acres and have lived here for more than 18 years. We enjoy the peace and serenity of the beautiful Texas Hill County. We have fresh, pristine steams that dissect our property. We enjoy an abundance of wildlife including whitetail deer, Rio Grande turkey, frogs, fish and over 40 species of birds, including 33 identified migratory bird species. We are concerned that the domestic discharge permit filed by Blizexas, LLC will threaten all of this. We maintain a wildlife management program supporting birds and all the wildlife that make our ranch home.

Blizexas, LLC is proposing to install a drip irrigation system to discharge wastewater from the proposed music venue at a rate not to exceed 12,000 gallons per day. We are concerned that this amount of wastewater has the potential to impact the Trinity Aquifer, which supplies drinking water to thousands of Central Texans. In addition, we are concerned that the calculations used to determine the amount of wastewater are incorrect. The Edwards Aquifer Recharge Zone lies directly beneath the property. This is especially concerning considering that we do not feel like the applicant adequately characterized the geology of the site. The entire area of the proposed site sits over a bed of limestone and karst features which allows water to directly percolate to the aquifer and potentially contaminate our drinking water supplies.

We are concerned with the lack of topsoil at the proposed location of the drip fields. The applicant is proposing to bring in additional soil for the proposed irrigation field. Where will this topsoil come from and how will the area be brought up to grade to support the drip irrigation system? How is the applicant proposing to keep the topsoil in place once there? The proposed location of the drip irrigation fields

has a greater than a 10% slope, which makes runoff of the soil and wastewater offsite a significant challenge.

The drainage from the proposed location flows directly into the Barton Creek watershed. How does the applicant propose to mitigate any nutrients from the wastewater from impacting our pristine hill country creeks?

Allowing nutrients like nitrogen and phosphorus in the wastewater has the potential to create algae blooms and destroy the aesthetics and quality of our streams. Not to mention poison our livestock and wildlife that rely on these creeks for their water. Due to the sensitive nature of the watershed, TCEQ staff should limit the amount of Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) to 5 mg/l, Ammonia-Nitrogen to 2 mg/l, and Phosphorus to 1 mg/l. These levels would be consistent with those on permits in other sensitive watersheds.

The applicant is proposing to install a large parking lot to accommodate visitors. This will result in greater than 60% of the site being under impervious cover resulting in a significant amount of stormwater runoff from the site. Does the TLAP permit account for the runoff from the parking lot impacting the groundwater and surface water? How are they proposing to contain any storm water runoff from the parking area? The runoff from the parking lot will contain oily waste from vehicles, which also has the potential of running off into Barton Creek. As stated previously, all drainage from this area migrates straight down into the Edwards Aquifer or runs into the surrounding streams.

****We received almost 4" of rain in 4 days last week which caused a tremendous amount of runoff. How is the applicant planning on managing the huge run off from our torrential rains that will overrun the wastewater system?****

While we are not opposed to growth, we feel that this type of growth is not supported in this area of Travis/Hays County.

Sincerely,

Terri & Tim Van Ackeren

23AUG '23 10:00

TCEQ OCC

Terri & Tim Van Ackeren
Lazy T Ranch
10017 Crumley Ranch Road
Austin, Texas 78738-6020
LazyTRanchStables@gmail.com
512-731-4119

REVIEWED
AUG 24 2023
By GCW PM

Sent Via Upload Link & Regular Mail

August 20, 2023

Office of the Chief Clerk, MC 105
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

RE: Domestic Wastewater Permit No. WQ0016111001 filed by Blizexas, LLC

Office of the Chief Clerk:

My name is Terri Van Ackeren, I live on Crumley Ranch Road in Travis County. I am writing to express my concerns and to request a public meeting regarding the domestic wastewater Permit No. WQ0016111001 filed by Blizexas, LLC. My property is located approximately 1.01 mile from the proposed wastewater discharge location. My husband Tim and I own 165+/- acres, have lived here for more than 18 years. We enjoy the peace and serenity of the beautiful Texas hill country. We have fresh pristine streams that dissect our property. We enjoy an abundance of wildlife including whitetail deer, Rio Grande turkeys, frogs, fish and various species of birds including the golden-cheeked warbler, which is currently on the endangered species list. We are concerned that the domestic discharge permit filed by Blizexas, LLC will threaten all of this. We maintain a wildlife management program supporting birds and all of the wildlife that make our ranch home.

Blizexas, LLC is proposing to install a drip irrigation system to discharge wastewater from their proposed music venue at a rate not to exceed 12,000 gallons per day. We are concerned that this amount of wastewater has the potential to impact the Trinity Aquifer, which supplies drinking water to thousands of Central Texans. The aquifer recharge zone lies directly beneath the property. This is especially concerning considering that we do not feel that the applicant adequately characterized the geology of the site. The entire area site sits over a bed of limestone, which allows water to percolate into the aquifer and potentially contaminate our drinking water.

We are concerned with the lack of topsoil at the proposed location. The applicant is proposing to bring in additional soil for the proposed irrigation field. Where will this topsoil come from and how will the area be brought up to grade to support the drip irrigation system?

The area where the applicant is proposing to install the drip fields has greater than 10% slope, how is the applicant proposing to contain the runoff leaving the site?

The drainage from this area feeds directly into Barton Creek. How does the applicant propose to mitigate any nutrients from the wastewater from impacting our creeks?

Allowing nutrients like nitrogen and phosphorus in the wastewater has the potential to create algae blooms and destroy the aesthetics and quality of our streams. Not to mention poison our livestock & wildlife that rely on these creeks for their water.

The applicant is proposing to install a large parking lot to accommodate the 5,000 seat music venue. How are they proposing to contain any storm water runoff from the parking area? The runoff from the parking lot will contain oily waste from automobiles, which also has the potential of running into the creek. As stated previously, all drainage from this area migrates straight down into the aquifer or runs off into the surrounding streams.

There is an existing water well located on the property. How is the applicant proposing to protect the well from contamination from the site?

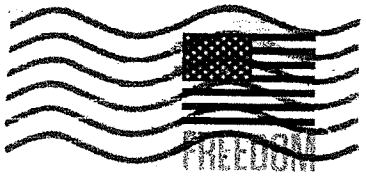
While we are not opposed to growth, we feel that this type of growth is not supported in this area of Hays/Travis County.

Sincerely,

Terri Van Ackeren

Terri & Tim Van Ackeren
Lazy T Ranch
10017 Crumley Ranch Road
Austin, Texas 78738-6020

AUSTIN TX 786
RIO GRANDE DISTRICT
21 AUG 2023 PM 3 L



23AUG '23 10:00

TCEQ OCC

RECEIVED
AUG 23 2023
TCEQ MAIL CENTER
JR

Office of the Chief Clerk, MC 105
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

78711-308787

Misty Botello

From: PUBCOMMENT-OCC
Sent: Monday, August 21, 2023 3:50 PM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Permit WQ0016111001.docx

PM

From: LazyTRanchStables@gmail.com <LazyTRanchStables@gmail.com>
Sent: Monday, August 21, 2023 1:47 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Terri S Van Ackeren

EMAIL: LazyTRanchStables@gmail.com

COMPANY:

ADDRESS: 10017 CRUMLEY RANCH RD
AUSTIN TX 78738-6020

PHONE: 5127314119

FAX:

COMMENTS: See Attached Letter

Terri & Tim Van Ackeren
Lazy T Ranch
10017 Crumley Ranch Road
Austin, Texas 78738-6020
LazyTRanchStables@gmail.com
512-731-4119

Sent Via Upload Link & Regular Mail

August 20, 2023

Office of the Chief Clerk, MC 105
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

RE: Domestic Wastewater Permit No. WQ0016111001 filed by Blizexas, LLC

Office of the Chief Clerk:

My name is Terri Van Ackeren, I live on Crumley Ranch Road in Travis County. I am writing to express my concerns and to request a public meeting regarding the domestic wastewater Permit No. WQ0016111001 filed by Blizexas, LLC. My property is located approximately 1.01 mile from the proposed wastewater discharge location. My husband Tim and I own 165+/- acres, have lived here for more than 18 years. We enjoy the peace and serenity of the beautiful Texas hill country. We have fresh pristine streams that dissect our property. We enjoy an abundance of wildlife including whitetail deer, Rio Grande turkeys, frogs, fish and various species of birds including the golden-cheeked warbler, which is currently on the endangered species list. We are concerned that the domestic discharge permit filed by Blizexas, LLC will threaten all of this. We maintain a wildlife management program supporting birds and all of the wildlife that make our ranch home.

Blizexas, LLC is proposing to install a drip irrigation system to discharge wastewater from their proposed music venue at a rate not to exceed 12,000 gallons per day. We are concerned that this amount of wastewater has the potential to impact the Trinity Aquifer, which supplies drinking water to thousands of Central Texans. The aquifer recharge zone lies directly beneath the property. This is especially concerning considering that we do not feel that the applicant adequately characterized the geology of the site. The entire area site sits over a bed of limestone, which allows water to percolate into the aquifer and potentially contaminate our drinking water.

We are concerned with the lack of topsoil at the proposed location. The applicant is proposing to bring in additional soil for the proposed irrigation field. Where will this topsoil come from and how will the area be brought up to grade to support the drip irrigation system?

The area where the applicant is proposing to install the drip fields has greater than 10% slope, how is the applicant proposing to contain the runoff leaving the site?

The drainage from this area feeds directly into Barton Creek. How does the applicant propose to mitigate any nutrients from the wastewater from impacting our creeks?

Allowing nutrients like nitrogen and phosphorus in the wastewater has the potential to create algae blooms and destroy the aesthetics and quality of our streams. Not to mention poison our livestock & wildlife that rely on these creeks for their water.

The applicant is proposing to install a large parking lot to accommodate the 5,000 seat music venue. How are they proposing to contain any storm water runoff from the parking area? The runoff from the parking lot will contain oily waste from automobiles, which also has the potential of running into the creek. As stated previously, all drainage from this area migrates straight down into the aquifer or runs off into the surrounding streams.

There is an existing water well located on the property. How is the applicant proposing to protect the well from contamination from the site?

While we are not opposed to growth, we feel that this type of growth is not supported in this area of Hays/Travis County.

Sincerely,

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 2:08 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001
Attachments: Comments Others to Hand In 1-29-24.docx

eComment = H
Attachment = PM, H

From: sbwarntjes@msn.com <sbwarntjes@msn.com>
Sent: Monday, January 29, 2024 12:14 PM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Steve Warntjes

EMAIL: sbwarntjes@msn.com

COMPANY:

ADDRESS: 14410 FITZHUGH RD
AUSTIN TX 78736-6303

PHONE: 5122891434

FAX:

COMMENTS: "My name is Steve Warntjes and I am a landowner whose primary residence is within a half mile of the proposed amphitheater. I am hereby requesting a contested case hearing for this wastewater permit application. I am very concerned about the 2/3 impervious cover the developer has proposed, combined with the small treated sewage irrigation fields surrounded by this impervious cover, and the very lax draft wastewater permit that TCEQ has approved. All of this would likely lead to polluted runoff that could enter my property boundary. On my property there are

numerous springs that bubble up from the Middle Trinity Aquifer. While I use rainwater collection and don't have a well on my property, these numerous springs dry up during the late spring, summer, and early fall. Any wastewater or stormwater from the proposed venue could flow onto my property, into these dry springs and into the Middle Trinity Aquifer below. The polluted wastewater/stormwater combination could pollute the Aquifer and therefore any Hays County wells that draw water from this Aquifer, of which there are thousands. Accordingly, please deny this permit in its entirety.

TCEQ Registration Form
January 29, 2024

Blizexas, LLC
Proposed Permit No. WQ0016111001

PLEASE PRINT

Name: ~~Steeve~~ ~~Wrantjes~~ Warntjes

Mailing Address: _____

Physical Address (if different): 14410 Fitzhugh Rd

City/State: ~~Dripping Springs~~ Austin TX **Zip:** 78736

This information is subject to public disclosure under the Texas Public Information Act

Email: ~~steeve~~ sbwarntjes@msn.com

Phone Number: (512) 289-1434

- Are you here today representing a municipality, legislator, agency, or group? ☒ Yes ☐ No

  If yes, which one? Fitzhugh Neighbors

☒ **Please add me to the mailing list.**

☒ **I wish to provide formal *ORAL COMMENTS* at tonight's public meeting.**

☐ **I wish to provide formal *WRITTEN COMMENTS* at tonight's public meeting.**

(Written comments may be submitted at any time during the meeting)

Please give this form to the person at the information table. Thank you.

14410 Fitzhugh RD

Steve Worthy

512 - 289 - 1494

IP No. 276524 Name WARNTJES,STEVE Organization Title

IP Detail | Address | Electronic Communications | Items & Actions | Additional IDs | Counties | Customers & Regulated Entities

* Request Received Date 01/29/2024 Last Polling Date Legislator

Comment 03/17/25: ADDED ADDRESS DUE TO RETURN MAIL RECEIVED 03/10/20345 MEDLIN CREEK LOOP, DRIPPING SPRINGS TX 78620. MW

Save Reset

Individual

Name	Prefix	Suffix	Title	Organization	Concerned Citizen	Delete
WARNTJES,STEVE	-	-			NO	×

Add...

Address

Street/PO Box 345 MEDLIN CREEK LOOP State TX Zip 78620-3156

City DRIPPING SPRINGS Country USA

Building/Mail Drop Multiple Addresses Yes

Electronic Communications

Type PHONE Country Phone (512) 289-1434 Ext.

Type Country Fax Ext.

Type EMAIL sbwarntjes@msn.com

IP No. 276524 Name WARNTJES,STEVE Organization Title

IP Detail | Address | Electronic Communications | Items & Actions | Additional IDs | Counties | Customers & Regulated Entities

Items

Show more columns

Number	Program	ID Type	Additional ID	Principal	CN	Status	Active	Comments	Delete
127674	WWPERMIT	PERMIT	WQ0016111001	BLIZEXAS LLC	CN605898865	ACTIVE	YES	NO	×

Associate...

Actions

Date/Time	Type	Delivery	Acknowledgement	Comments	Documents	Delete
01/29/2024 07:00 PM	MAILING LIST ADD	ATTEND PM	-	NO	NO	×
01/29/2024 07:00 PM	COMMENT - ORAL ENGLISH	ATTEND PM	-	NO	NO	×
01/29/2024 12:13 PM	HEARING REQUEST ENGLISH	ECOMMENT	-	YES	YES	×
01/29/2024 12:13 PM	HEARING REQUEST ENGLISH	ECOMMENT	-	YES	YES	×
01/29/2024 12:13 PM	PUBLIC MEETING - REQ ENG	ECOMMENT	-	YES	YES	×

Add...

Edit Protestant Comments

Comments

"My name is Steve Warntjes and I am a landowner whose primary residence is within a half mile of the proposed amphitheater. I am hereby requesting a contested case hearing for this wastewater permit application. I am very concerned about the 2/3 impervious cover the developer has proposed, combined with the small treated sewage irrigation fields surrounded by this impervious cover, and the very lax draft wastewater permit that TCEQ has approved. All of this would likely lead to polluted runoff that could enter my property boundary. On my property there are numerous springs that bubble up from the Middle Trinity Aquifer. While I use rainwater collection and don't have a well on my property, these numerous springs dry up during the late spring, summer, and early fall. Any wastewater or stormwater from the proposed venue could flow onto my property, into these dry springs and into the Middle Trinity Aquifer below. The polluted wastewater/stormwater combination could pollute the Aquifer and therefore any Hays County wells that draw water from this Aquifer, of which there are thousands. Accordingly, please deny this permit in its entirety.

Documents

File Name	Remove
Comments Others to Hand In 1-29-24.docx	×

1-1 of 1 records Page 1 of 1 1 5

+ Choose File

Drag & Drop files to the box above to upload, or select Choose File

Ok Reset Cancel

January 29, 2024

Office of the Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC 105
Austin, TX 78711-3087

RE: Blizexas LLC, CN605898865; Rockingwall Ranch, RN111436440; Proposed Texas Land Application Permit (TLAP) No. WQ0016111001; Supplemental Comments, Request for Public Meeting, and Request for Contested Case Hearing

Dear Chief Clerk Gharis:

I am a landowner in close proximity to Blizexas's proposed site for a music venue. I have several concerns regarding this site and Blizexas's application for a Texas Land Application Permit. These include: (1) the permit application has several inaccuracies that have yet to be corrected; (2) the proposed drip fields are insufficiently-sized and inappropriately-located; (3) the design of the site will allow for stormwater inflows into the drip fields; (4) these stormwater inflows will cause overflows from the drip fields resulting in contamination of groundwater and surface waters; (5) the geology of the site, which includes limestone and karst features, is incompatible with the proposed land application; (6) the application significantly underestimates the amount of wastewater that will be generated at the proposed site; (7) the application proposes insufficient storage capacity to properly handle the amount of wastewater that will be generated at the proposed site; (8) the application proposes inadequate nuisance odor abatement measures; (9) the proposed buffer between the drip fields and adjacent properties is insufficient and does not comply with applicable requirements; (10) the application's sewage sludge solids management plan, the Recharge Feature Plan, the Soil Evaluation, the Site Preparation Plan, and the Soil Sampling and Testing do not comply with applicable requirements; (11) the application has inadequate provisions for ensuring sufficient water resources to maintain vegetation and prevent dust nuisance emissions; (12) the operations will endanger local groundwater supplies that are used by neighbors for domestic and livestock purposes; (13) the proposed discharges will negatively impact Barton Creek; (14) the application includes insufficient information regarding Blizexas's plans and capability to respond to malfunctions in the Plant's equipment; (15) the application makes faulty assumptions in the calculations for the wastewater treatment system design; and (16) the application fails to include an engineering report, including plans and specifications, that meets the requirements in 30 TAC Chapter 222, Subsurface Drip Dispersal Systems, Subchapter D: Design Criteria.

I also request that the agency impose discharge limits for Nitrogen and Phosphorus from any authorized discharge and decrease the permitted discharge limits for Total Suspended Solids ("TSS") and Biochemical Oxygen Demand ("BOD"). Specifically, I request that the draft permit be revised to impose a maximum limit of 5 mg/l for both TSS and BOD; 2 mg/l Ammonia-Nitrogen (NH3-N); and 1 mg/l for Total Phosphorus.

In addition, the proposed impervious cover at 66.45% of the site under the available site design documents is unacceptable. Such a design heightens the potential for stormwater overflows into the proposed drip fields and increases the likelihood of overflows out of those drip fields

resulting in contamination of groundwater and surface waters. This concern is exacerbated by the inadequacy of the post-construction stormwater control and detention measures proposed by Blizexas.

Please deny Blizexas's application outright or make significant changes to the proposed draft permit to address these comments.

From Mike Clifford

My name is Steve Warntjes and I am a landowner whose primary residence is within a half mile of the proposed amphitheater. I am hereby requesting a contested case hearing for this wastewater permit application. I am very concerned about the 2/3 impervious cover the developer has proposed, combined with the small treated sewage irrigation fields surrounded by this impervious cover, and the very lax draft wastewater permit that TCEQ has approved. All of this would likely lead to polluted runoff that could enter my property boundary. On my property there are numerous springs that bubble up from the Middle Trinity Aquifer. While I use rainwater collection and don't have a well on my property, these numerous springs dry up during the late spring, summer, and early fall. Any wastewater or stormwater from the proposed venue could flow onto my property, into these dry springs and into the Middle Trinity Aquifer below. The polluted wastewater/stormwater combination could pollute the Aquifer and therefore any Hays County wells that draw water from this Aquifer, of which there are thousands. Accordingly, please deny this permit in its entirety."

Misty Botello

From: PUBCOMMENT-OCC
Sent: Wednesday, August 30, 2023 11:15 AM
To: PUBCOMMENT-OCC2; PUBCOMMENT-OPIC; PUBCOMMENT-ELD; PUBCOMMENT-WQ
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: pagwcpa@aol.com <pagwcpa@aol.com>
Sent: Wednesday, August 30, 2023 10:38 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Patricia Whiteside

EMAIL: pagwcpa@aol.com

COMPANY:

ADDRESS: 2307 BARTON HILLS DR
AUSTIN TX 78704-4501

PHONE: 5126584797

FAX:

COMMENTS: This permit will allow very dangerous amounts of wastewater effluent to damage not only the immediate area but all of Barton Creek between the project and Lady Bird Lake. Please, at the very least, schedule a public hearing on this permit request so the Commission has a broader perspective on the effects of granting the permit.

Renee Lyle

From: PUBCOMMENT-OCC
Sent: Monday, January 29, 2024 2:01 PM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

H

From: mark.zima@yahoo.com <mark.zima@yahoo.com>
Sent: Monday, January 29, 2024 8:44 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

NAME: Mark Wojcik

EMAIL: mark.zima@yahoo.com

COMPANY:

ADDRESS: 12900 HIGH SIERRA
AUSTIN TX 78737-9527

PHONE: 5122019726

FAX:

COMMENTS: I write to state my objections and opposition to the proposed permit WQ001611100. I 1ive approximately 1.5 miles in a straight line of site to the proposed concert venue. While the impact on me personally will be significant in terms of noise, light and traffic pollution, there is a very significant threat to the entire area's groundwater, aquifer, and surface water management. The huge site with plans to accommodate thousands of people and cars is positioned close to numerous streams and above the aquifer making it inevitable that run off, leaks, waste and the use of water will affect the entire north Hays County area. The chances of polluting everyone's wells in the area are high and the plan to pump water will greatly increase the number of dry wells in the surrounding area which has been hard hit by recent

drought conditions. The area needs good water management and conservation not a direct attack on every water source for miles around. The area has significant amounts of wildlife and these populations are likely to be affected even more than the human residents. Growth is inevitable in this region, but it needs to be on a scale that allows for good water and waste management. This proposal exceeds that common sense approach many times over. If this application is approved I request a contested hearing as a result to further demonstrate that no number of generic planning promises can offset the obvious mismatch of the bloated site to the delicate water infrastructure it will overwhelm.

IP No. 288157 Name WOJCIK, MARK Organization Title

IP Detail | Address | Electronic Communications | Items & Actions | Additional IDs | Counties | Customers & Regulated Entities

* Request Received Date 11/27/2022 Last Polling Date Legislator

Comment

Save Reset

Individual

Name	Prefix	Suffix	Title	Organization	Concerned Citizen	Delete
WOJCIK, MARK	-	-			NO	

Add...

Address

Street/PO Box 12900 HIGH SIERRA State TX Zip 78737-9527

City AUSTIN Country USA

Building/Mail Drop

Electronic Communications

Type PHONE Country Phone (512) 201-9726 Ext.

Type Country Fax Ext.

Type EMAIL markzima@yahoo.com

REVIEWED

AUG 2 4 2023

By

IP No. 238157 Name WOJCIK MARK Organization Title

IP Detail | Address | Electronic Communications | Notes & Actions | Additional IDs | Counties | Customers & Regulated Entities

Items

Show more columns

Number	Program	ID Type	Additional ID	Principal	CN	Status	Active	Comments	Delete
137674	WWPERMIT	PERMIT	WQ0016111001	BLIZEXAS LLC	CN605393365	ACTIVE	YES	NC	✖

Associate...

Actions

Date/Time	Type	Delivery	Acknowledgement	Comments	Documents	Delete
08/20/2023 02:01 PM	TBD	ECOMMENT	-	YES	NO	✖
11/27/2022 09:41 AM	COMMENT-WRITTEN	ECOMMENT	-	YES	NO	✖

Add...

Back To Search

Edit Protestant Comments

Comments

Re: Opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue

Dear TCEQ Commissioners,
I am writing as a concerned citizen to express my strong opposition to Domestic Wastewater Permit No. WQ0016111001 for Blizexas LLC Music Venue. I reside about 1.5 miles in a direct line from the proposed venue and I believe there are significant environmental risks associated with this project.
The potential impact on Barton Creek and the other water sources downstream from my residence, is of particular concern. The health of these vital hill country streams as well as the well-being of local wildlife will be jeopardized by the wastewater discharge from a venue of this sort.
It is clear that the availability and quality of water in this area will be a significant issue in the years ahead and it is critical that decisions are taken with an eye to the future for everyone in this area. Given these environmental concerns, I respectfully request that TCEQ denies the domestic wastewater permit for Blizexas LLC Music Venue. Additionally, I urge the organization of a public meeting to address these pressing issues with local residents and stakeholders.
Thank you for your attention to this matter. I am available for any further discussion or information you may require.
Sincerely,
Mark Wojcik
12900 High Sierra Rd
Austin, Texas 78737
512-201-9725
markzima@yahoo.com
August 20, 2023

Documents

+ Choose File

Drag & Drop Files to the box above to upload, or select Choose File

OK Reset Cancel

Christina Bourque

From: PUBCOMMENT-OCC
Sent: Monday, November 28, 2022 10:46 AM
To: PUBCOMMENT-WQ; PUBCOMMENT-ELD; PUBCOMMENT-OCC2; PUBCOMMENT-OPIC
Subject: FW: Public comment on Permit Number WQ0016111001

From: Mark.zima@yahoo.com <Mark.zima@yahoo.com>
Sent: Sunday, November 27, 2022 9:42 AM
To: PUBCOMMENT-OCC <PUBCOMMENT-OCC@tceq.texas.gov>
Subject: Public comment on Permit Number WQ0016111001

REGULATED ENTY NAME ROCKINGWALL RANCH

RN NUMBER: RN111436440

PERMIT NUMBER: WQ0016111001

DOCKET NUMBER:

COUNTY: HAYS

PRINCIPAL NAME: BLIZEXAS LLC

CN NUMBER: CN605898865

FROM

NAME: Mark Wojcik

EMAIL: Mark.zima@yahoo.com

COMPANY:

ADDRESS: 12900 HIGH SIERRA
AUSTIN TX 78737-9527

PHONE: 5122019736

FAX:

COMMENTS: The proposed development is at a scale that is guaranteed to put excessive pressure on the surrounding environment and the local infrastructure. Currently this area is barely able to manage the growth in small businesses which line small country roads and numerous low water crossings. That pressure will be dwarfed by a venue which will attract thousands of cars and the attendant noise, light and air pollution guaranteed to affect the surrounding natural environment. The water requirements for such a venue are a particular concern since the site will surely have the

advantage in the old Texas practice of water belonging to the man with the biggest pump. The recent drought stressed the whole county and there are numerous reports of dry wells in the area of this venue this year. With projections of ongoing warming and drought conditions the presence of a new site with major water needs looks like a recipe for water shortages for all the surrounding human and animal residents, let alone continued danger to the aquifer itself. The issue of this site is one of scale and appropriateness to the natural area. If approved, environmental damage is guaranteed, but the further insult will be the levels of taxation required to build the road and bridge infrastructure needed to subsidize the venue's successful operation. Wrong type of business in the wrong place, designed for one person's benefit at the detriment of the whole area.